Service Source

iMac (Early 2006 17-inch)

15 January 2007

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iMac (Early 2006 17-inch)

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Service Source

Take Apart

iMac (Early 2006 17-inch)

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General Information

What's New?

15 January 2007

- The "No Power" symptom in Troubleshooting has been updated. If your computer won't turn on, try removing and reinstalling the SO-DIMMs.

13 November 2006

- The DC/DC power supply was incorporated into the "No Power" troubleshooting steps

October 2006

- 31 October 2006: Troubleshooting has been updated with a new symptom, "Fans running at full speed after computer turns on." Note: The customer may have entered a diagnostic mode that causes the fans to run at full speed. This symptom is very easy to resolve at the customer level.
- Photos of the EMI tape (922-44786 and 922-5026), used to repair torn and damaged EMI shielding, have been added to the EMI Shielding section in the General Information chapter.

August 2006

- Updated the photo in step 1 of the optical drive removal.
- Added the optical flex cable (922-7154) part number to the exploded view drawing.
- Removed the optical adapter board part number (922-7281) from the exploded view. The part is not used by this computer.
- Updated the Hard Drive section in the Take Apart chapter. **Note**: Make sure to transfer the temperature sensor to the replacement hard drive. Use the double-stick tape enclosed with the replacement hard drive to attach the sensor.

March 2006

- A Screw Chart was added.
- Access tool modification. Refer to Opening the Computer in this chapter.
- Troubleshooting symptom added: No audio from internal speakers (may hear faint putt-putt or motorboating noise).
- Troubleshooting symptom added: No Video, No Boot Chime, White LED ON (Symptom 1)

February 2006: Memory

- The photographs have been updated in the memory chapter

January 2006

- iMac (Early 2006 17-inch) computer product introduction

Product View

Identifying the iMac (Early 2006 17-inch) Computer

In January 2006, a second generation iMac including a built-in iSight camera was introduced using an Intel processor. You can identify the iMac with the Intel processor in several ways.

1. Check the Configuration on the bottom label. On the bottom of your iMac stand, you'll find a label with the configuration information printed on it: The PowerPC G5 iMac computers will list "iMac G5" in the configuration. iMac computers using Intel processors will not list G5 in their configuration.
2. Check the "About This Mac" window. From the Apple Menu, choose About This Mac. The Processor listing will read the speed of the processor followed by the processor type; iMac computers introduced in January 2006 will list an Intel processor .

What's Different on this iMac?

Logic board

- Intel Core Processor 1.83 and 2.0 GHz
- No troubleshooting LEDs
- Battery is located on the top side of the logic board

AirPort Extreme and Bluetooth

- Separate antennas
- Separate parts: AirPort Extreme and Bluetooth boards

Memory

- SO-DIMM DDR2 667 MHz, memory slot
- Memory ejector levers are visibly different from the iMac G5 (iSight) models and should be used as shown in the Take Apart section.

Ports

- Mini-DVI video out port (for mirroring or extending the desktop)

Displays

- LVDS (Low Voltage Differential Signaling) displays

Power Management

- SMC replaces SMU (Refer to Kbase article **301733**)

Diagnostics

- Apple Hardware Test and Apple Service Diagnostic have new interfaces and procedures (See Diagnostics)

Troubleshooting

- New procedures for troubleshooting no power (See Symptom Charts)
- New procedures for troubleshooting no video (See Symptom Charts)
- Updated procedures for Target Disk Mode (See Using Target Disk Mode)
- Updated procedures for formatting hard drives (See Drive Formatting for Intel-based Macs.)

Tools Required

The following tools are required to service the computer. Note that a special access card (part 922-7172) is required to open the front bezel.

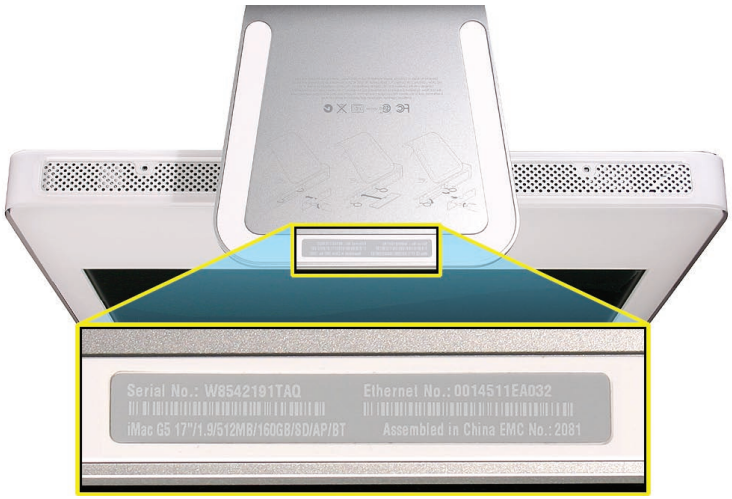
- ESD-safe workstation and mat
- Soft, clean towel or cloth (to protect the display and removed parts from scratches)
- Access card (part 922-7172)
- Black stick (or other nonconductive nylon or plastic flat-blade tool)
- Phillips #1 screwdriver
- Phillips #2 screwdriver
- Torx T8 screwdriver (magnetized)
- Torx T6 screwdriver (magnetized)
- Torx T10 screwdriver (magnetized)
- Flat-blade screwdriver

Orientation

For most repairs, the unit should be placed screen-side up, with the bottom facing toward you. Most photos in this manual reflect that orientation. The DIMM slot is located beneath the front bezel and is more easily accessed with the unit face-down on a soft, clean cloth.

Serial Number Location

iMac serial numbers are located on the bottom of the computer stand. Note: iMac computers using Intel processors will not have the G5 listed in the configuration (as shown below).



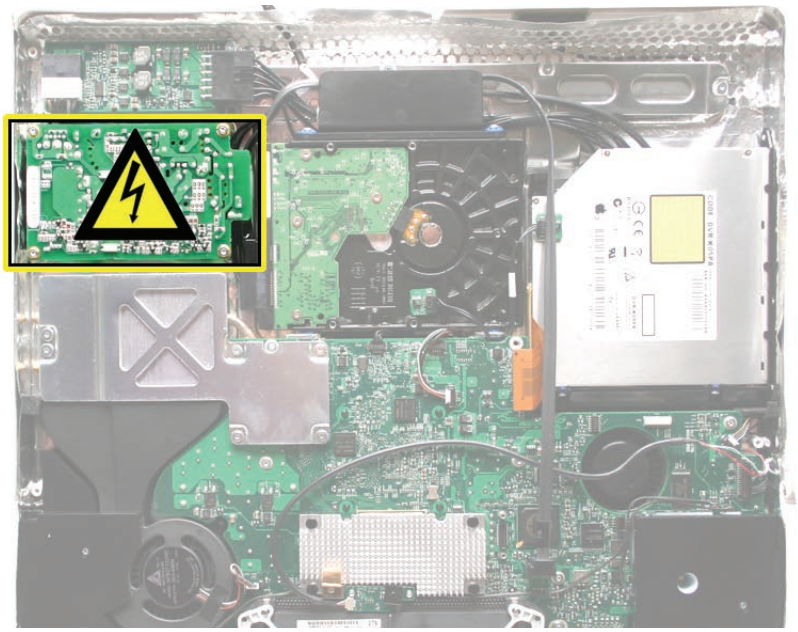
Safety

Warning: When the iMac (Early 2006) is under power, be aware that the power supply contains high voltages that pose a potential hazard to your personal safety. Never work on or near the power supply with the unit powered on, and as a further precaution always make sure the unit is unplugged when working on it with the front bezel removed.

WARNING: HIGH VOLTAGE
Text or photographs marked by this symbol indicate that a potential hazard to your personal safety exists from a high voltage source.

The AC/DC power supply board is a high voltage source with the unit under power, and remains powered up whenever the system is plugged in, whether or not the system is turned on. Use extreme caution when troubleshooting the system with the front bezel removed.

- Disconnect power to the system before performing maintenance.
- Don't work alone. In the even of an electrical shock it is important to have another individual present who can provide assistance.
- Keep one hand in your pocket when working on any iMac (Early 2006) that is plugged in. This will help ensure that your body does not provide a path to ground in the event that you accidentally make contact with the line voltage.
- Don't wear jewelry, watches, necklaces, or other metallic articles that could present a risk if they accidentally make contact with the power supply circuitry.



Opening the Computer

Apple authorized, desktop certified technicians only should ever remove the front bezel on the iMac (Early 2006). When the front bezel is removed, be sure to always ground yourself and follow ESD-safe repair practices

Removing the front bezel requires using a special access card (part 922-7172) to release latches located inside the upper corners of the front bezel. Slightly bending the upper quarter of the access tool card will help engage the latch more securely.

As you are inserting the card to disengage the latch you should squeeze the top of the bezel, that will help take pressure off of the latch and enable it to open easier. Note: If the bezel won't open, try cutting the card lengthwise into 3/4 inch or 1.5 cm strips. Insert the card again, aimed straight up, and try again.

Once the card has been released it is safe to open the bezel. See the **Front Bezel** Take Apart procedure for more information.

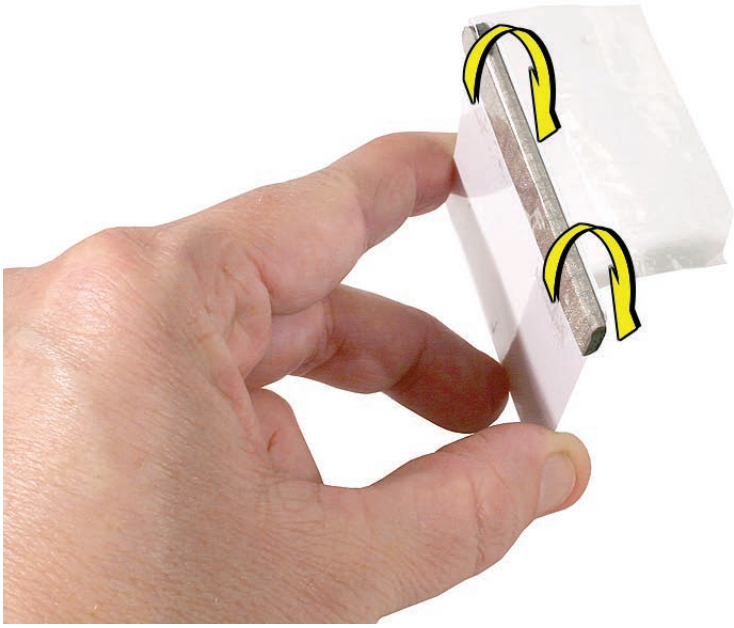
Access Tool Modification

If you wish to modify the access card tool, order kit 076-1213. The kit contains an access card and a piece of EMI gasket that can be cut and added to the top of the card. The additional thickness on the card will improve the chances of making contact with each bezel latch.

1. Remove the tape on the gasket to expose the sticky side of the gasket. Attach the sticky side of the EMI gasket to the top of the access card.

2. Cut the EMI gasket to the edge of the access card.

3. Using packing tape, or something equivalent, fold the tape over the EMI gasket to attach the gasket to the card.



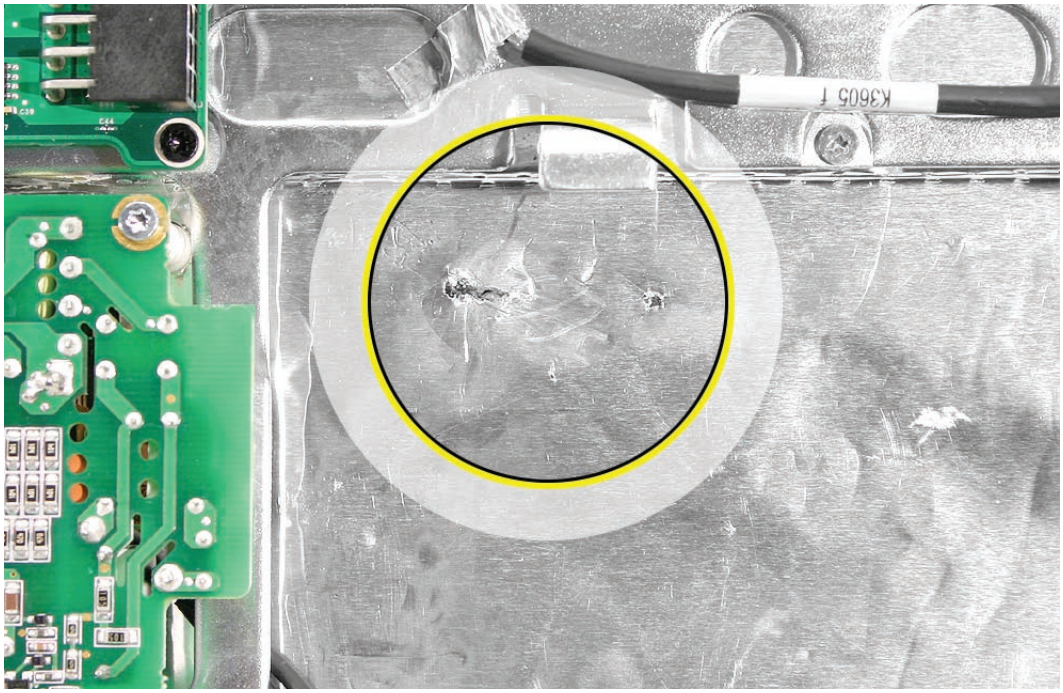
4. Bend the card at a slight angle at the top to make sure the card makes contact with each latch.

5. Refer to **Removing the Front Bezel** for the complete procedure.

EMI Shielding

The iMac enclosure is wrapped in EMI shielding that is easily torn and damaged. To maintain a properly shielded unit, you must repair all accidental tears and cracks to the shielding by covering them with EMI tape. Order EMI tape, part number 922-4786 (a long, thin strip) or 922-5026 (short, wide strips).

Cover nicks, such as the those shown below, with EMI tape. Pay particular attention to the EMI shielding inside the rear housing, shown below. The EMI shield is easily damaged when replacing modules.

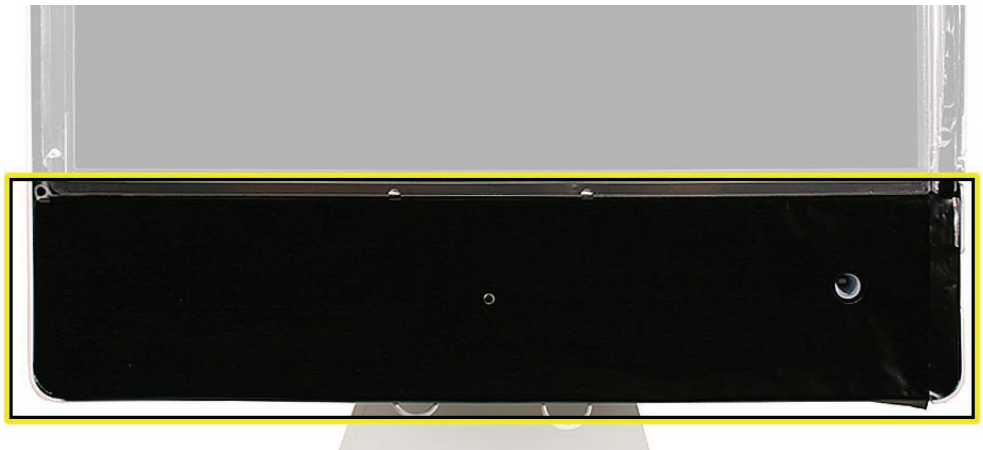


Pay particular attention to the EMI shielding inside the rear housing, shown below. The EMI shield is easily damaged when replacing the hard drive.

Lower EMI Shield

EMI tape covers the top and sides of the display panel, and the lower EMI shield covers the logic board along the bottom of the unit. The EMI tape and lower EMI shield are easily damaged when removed, and removal is necessary in order to access most components within the unit.

Should the EMI tape that seals the display, or the EMI shield covering the bottom of the enclosure (see photo below) accidentally tear, use EMI tape to repair and completely seal the unit.



Access Door

Tools

- Phillips #2 screwdriver.
- ESD-safe workstation and mat
- Soft, clean towel or cloth

Preliminary Steps

Before you begin, lay the computer down so the panel is face down and the bottom is facing you.

Part Location

Removing the Access Door

1. Raise the stand and use a Phillips #2 screwdriver to loosen the two captive screws that secure the memory access door. Remove the access door.

Replacing the Access Door

1. Make sure the memory ejector tabs are in the closed position before attaching the access door.
2. Position the access door on the rear housing over the memory compartment.
3. Lift the stand out of the way.
4. Use a Phillips #2 screwdriver to tighten the captive screws.

Memory

Tools

- Phillips #2 screwdriver.
- ESD-safe workstation and mat
- Soft, clean towel or cloth

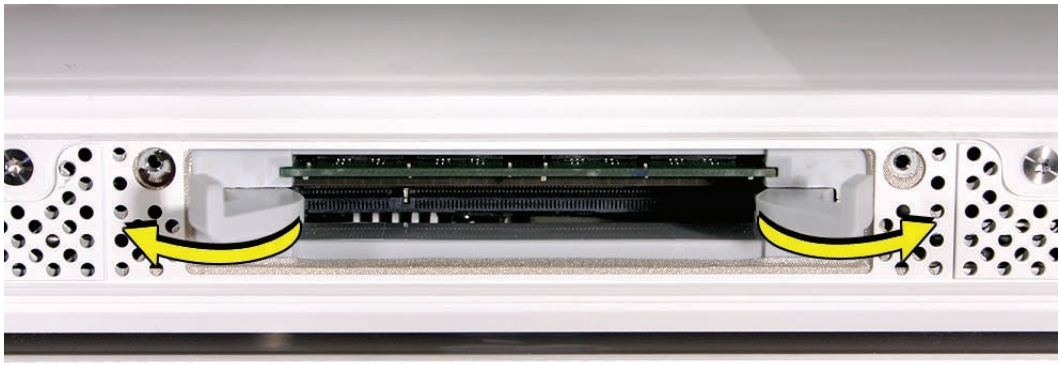
Preliminary Steps

Before you begin, lay the computer down so the panel is face down and the bottom is facing you.

Part Location

Removing the Memory

1. After removing the access door, touch the metal frame around the memory compartment to discharge any static electricity from your body.
   Important: Always discharge static before you touch any parts such as the memory board. To avoid generating static electricity, do not walk around the room until you have finished replacing the memory.
2. Pull the two levers in the memory compartment toward you. If a memory module is installed in the slot, pulling the levers will dislodge it. **Note:** The levers are used to remove memory not to install memory. Always install memory my hand.

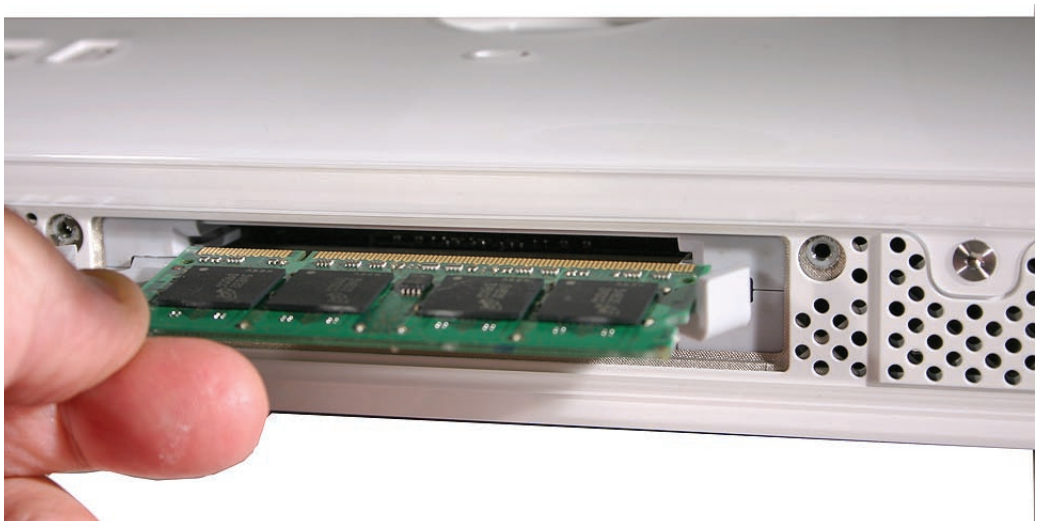


a

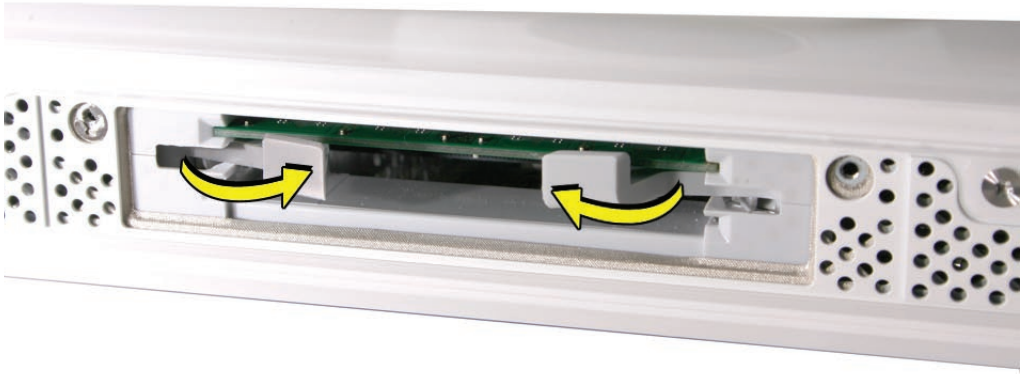
3. Set the memory module aside.

Replacing the Memory

1. Make sure the DIMM levers are all the way open.
2. With the computer face down, orient the DIMM with the notch on the left.



3. With your fingers, press the DIMM fully into the slot until you hear a click. After inserting the memory, fold the DIMM levers closed. There will be a slight resistance and you will hear a click when they fold into the closed position.



4. Replace the access door on the memory compartment.
5. Use a Phillips #2 screwdriver to tighten the captive screws on the access door.

Front Bezel

Tools

This procedure requires the following tools:

- Access card tool 922-7172
- Torx T8 screwdriver

Preliminary Steps

Before you begin, follow steps for removing the **access door** and the **memory.**

Part Location

Removing the Front Bezel

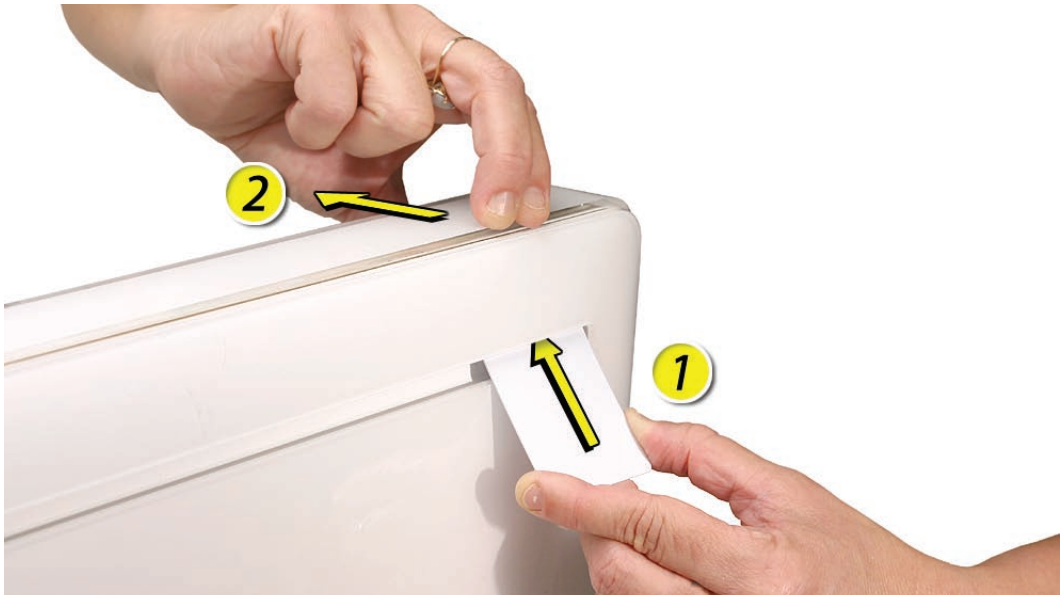
1. With the bottom facing toward you use a T8 torx screwdriver to remove the four bezel mounting screws.

2. Stand the computer upright.
3. Located the access card tool. Bend the upper quarter of the access tool card slightly to engage the front bezel latches. **Note**: Refer to **Access Tool Modification** in the General Information chapter if the bezel is difficult to open.

4. This picture shows how the access tool works. Pushing the tool up the vent on the rear cover releases the latches on the inside of the front bezel. Refer to the next step for the procedure.

5. Start on the left side (looking from the back of the unit). As you insert the card to disengage the latch, squeeze the top of the bezel, that will help take pressure off of the latch and enable it to open easier. As the bezel releases, pull the bezel away from the rear housing. Note: If the bezel won't open, try cutting the card lengthwise into 3/4 inch or 1.5 cm strips. Insert the card again, on a 45º angle, aimed toward the outer corner, and try again.

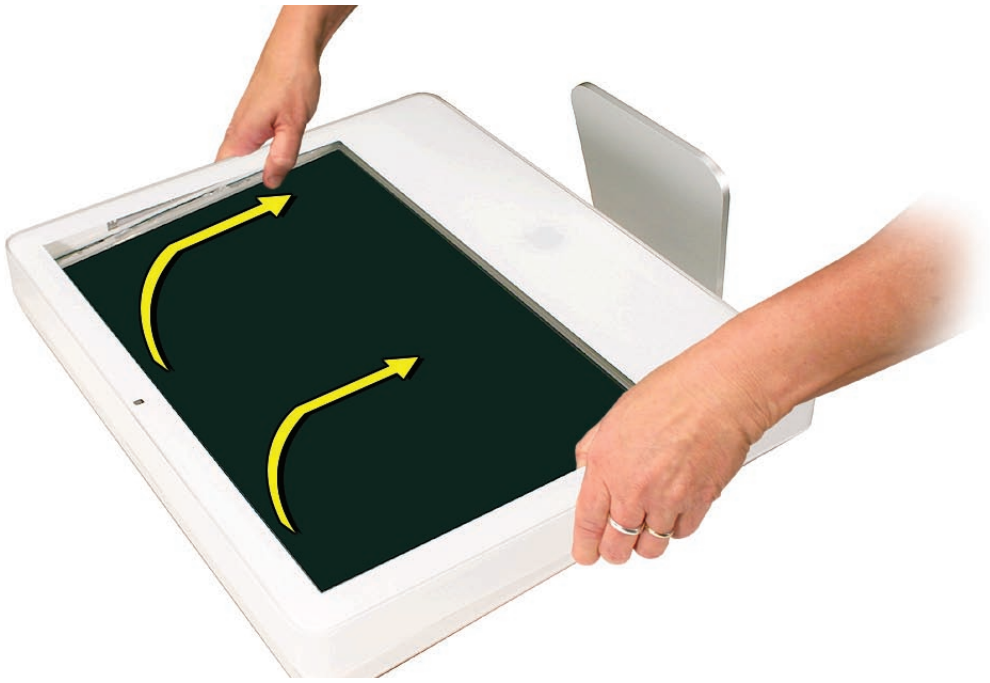
6. Repeat step 5 to release the locking latch in the right corner. Again, pull the bezel away as the card releases the latch.



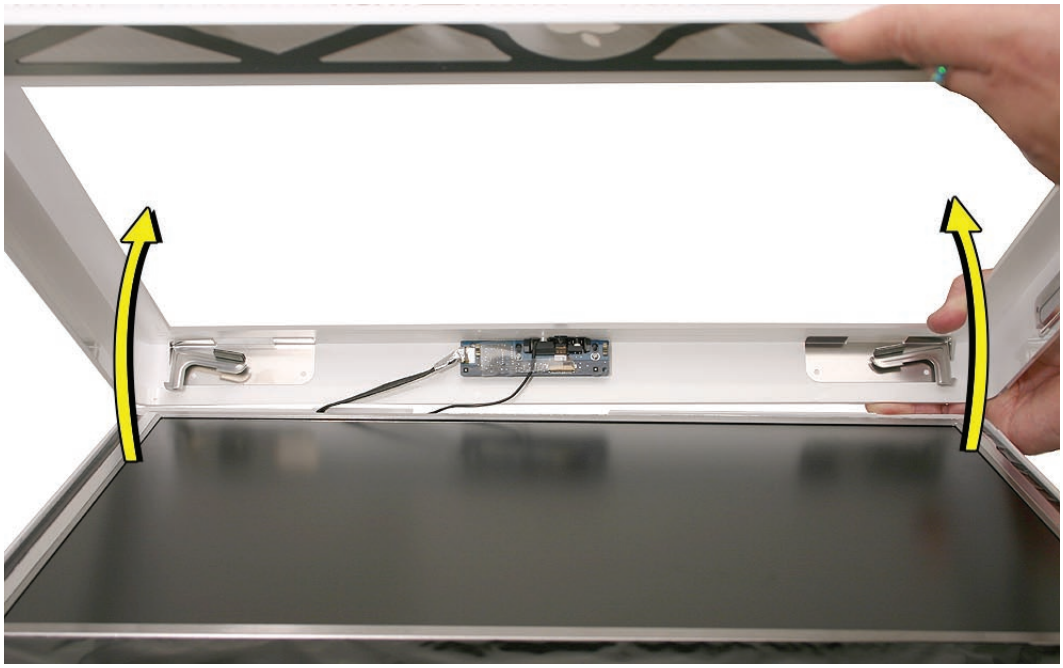
7. If the bezel won't release, pull the bottom of the bezel out a bit and insert the access card again.

8. Repeat step 7 for the left side.

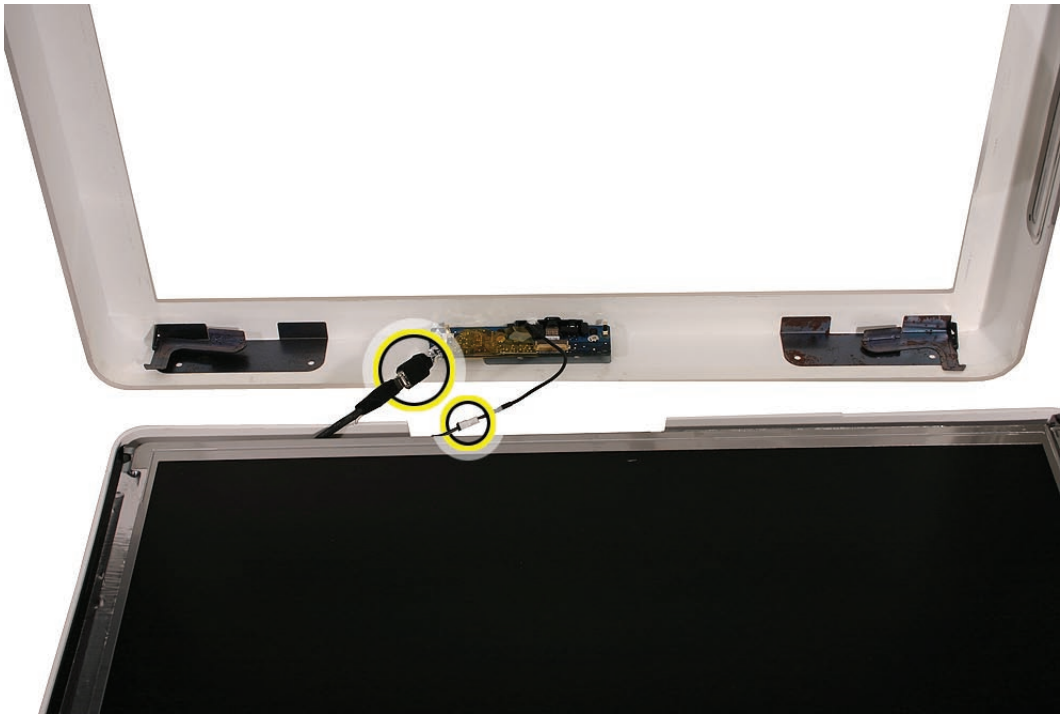
9. Once the access card has been removed, it is safe to open the bezel. Position the unit on an ESD mat, with the bottom facing toward you. **Caution**: Make sure the memory levers are closed and not protruding from the bezel when removing the bezel.



10. Lift the bottom of the front bezel straight up to remove it, and swing the bezel over onto its top edge so you can disconnect two cables attached to the top of the bezel.



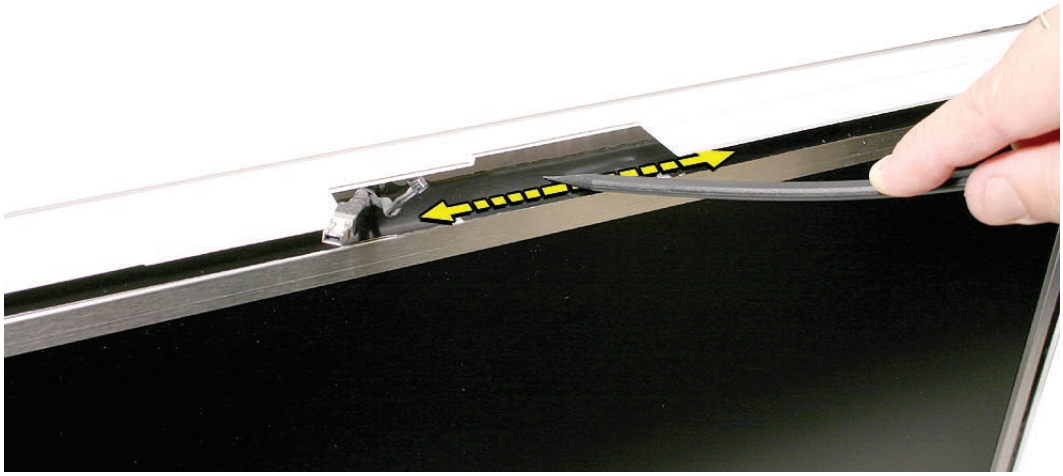
11. Swing the bezel up so you can disconnect the two camera board cables Remove the any kapton tape and disconnect the camera and microphone cables from the camera board..



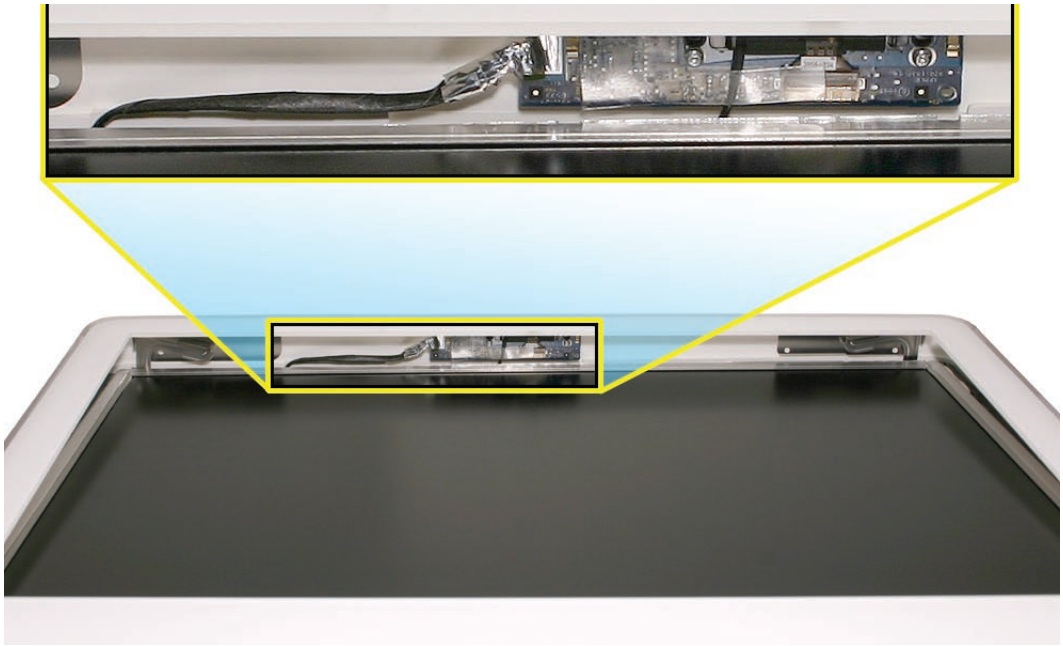
12. If replacing a damaged front bezel, remove the camera board.

Replacing the Front Bezel

1. Position the front bezel near the top edge of the unit and connect the two camera board connectors.
2. Make sure the black EMI shielding along the top of the LCD panel is not in the way of the locking mechanisms when you lower the front bezel onto the computer. Use a black stick to press (re-stick) the EMI shielding along the top of the panel.



3. Tuck the cables neatly into the channel on the rear housing.



4. Make sure the memory ejector levers are in the closed position (as shown) before lowering the front bezel over the ejectors.

5. Continue to lower the font bezel down and press the top corners of the front bezel to connect the latches. **Note**: Check that the latches are connected by lifting the front bezel at each corner.
6. Replace the four bezel mounting screws along the bottom of the computer.
7. Replace the access door and tighten the two captive screws.
8. Install any removed DIMMS after the unit is fully assembled. **Important**: Memory DIMMs must be installed by hand. Do not use the memory ejector levers to install memory.

Camera Board

Tools

The only tool required for this procedure is a T6 screwdriver.

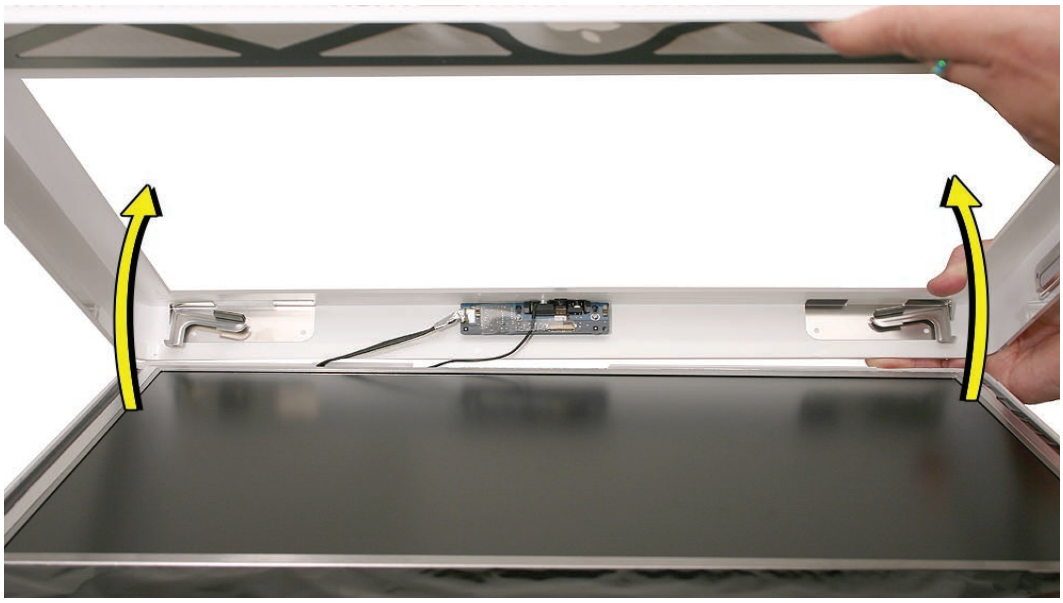
Preliminary Steps

Before you begin, follow steps for removing the **access door** and **front bezel.**

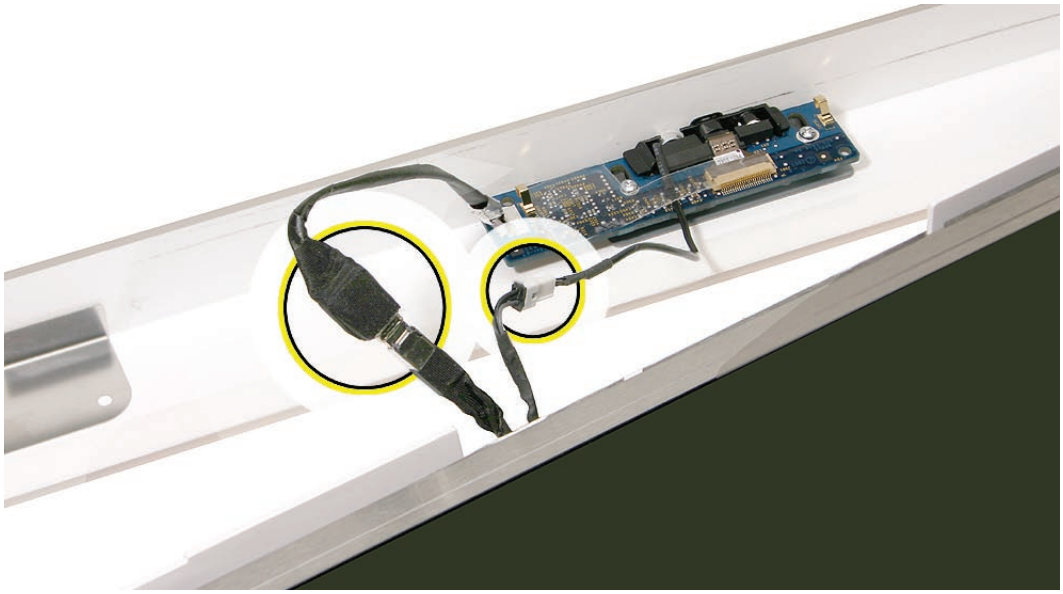
Part Location

Removing the Camera Board

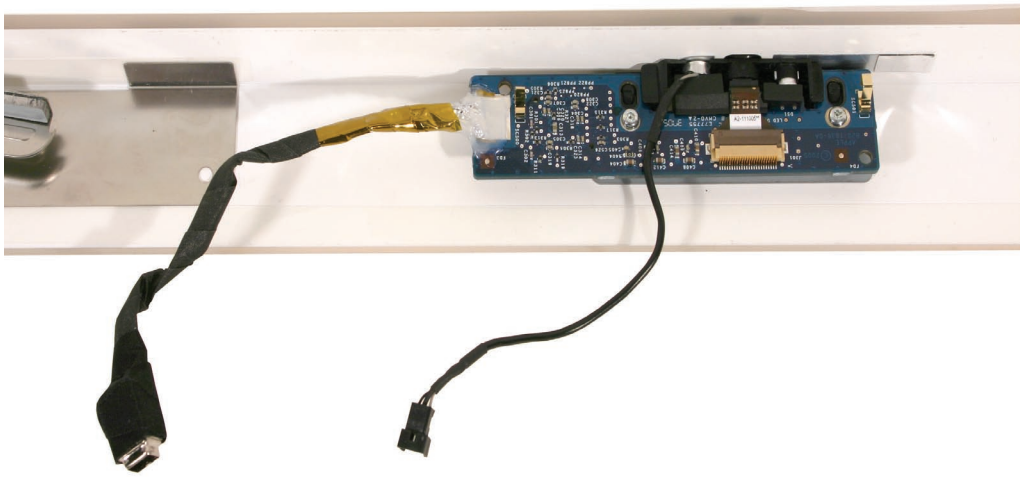
1. The camera board and cables are visible as you lift the front bezel off the computer.



2. Disconnect the camera and microphone cables.

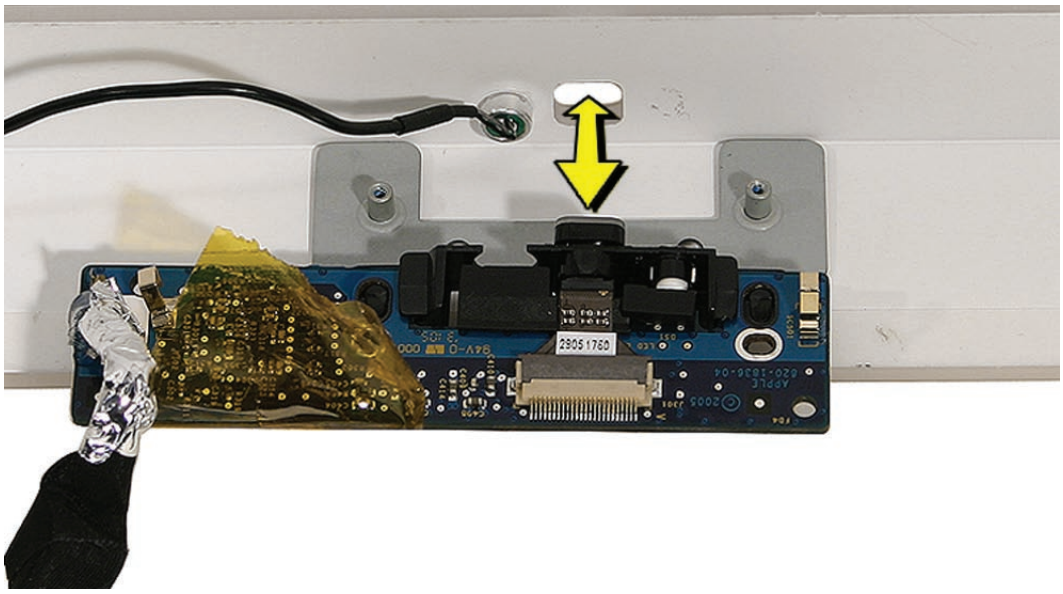


3. Using a T6 screwdriver, peel back the mylar and kapton tape as necessary and remove the two camera board mounting screws. Pull the camera board straight out of the lens aperture in the bezel to remove it.



Replacing the Camera Board

1. Carefully align and insert the camera lens until it is snug in the bezel aperture.



2. Install the camera board to the bezel with two mounting screws.
3. Replace the front bezel.
4. Replace the access door.

Lower EMI Shield

Tools

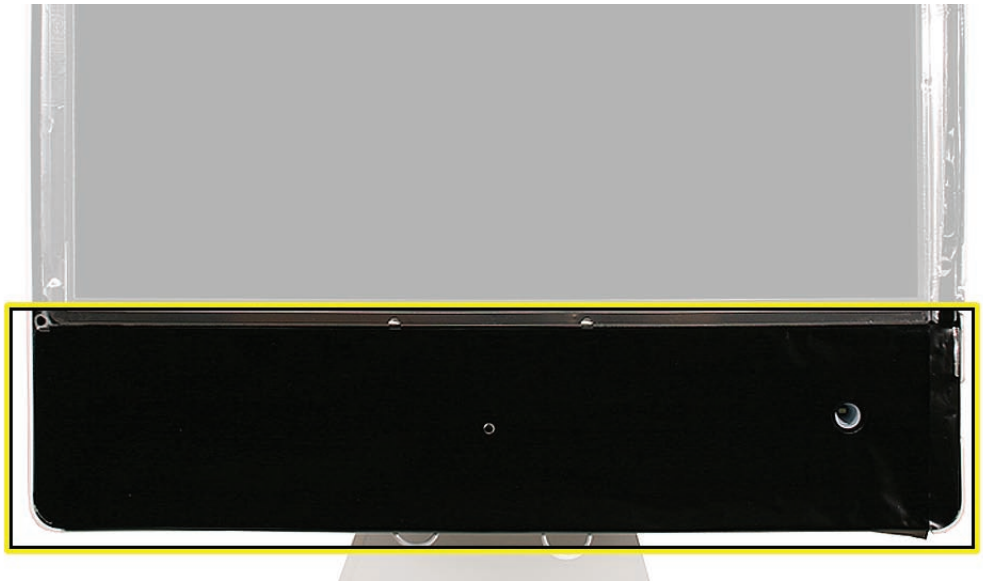
The only tool required for this procedure is a “black stick” (or other nonconductive nylon or plastic flat-blade tool).

Preliminary Steps

Before you begin, follow steps for removing the following:

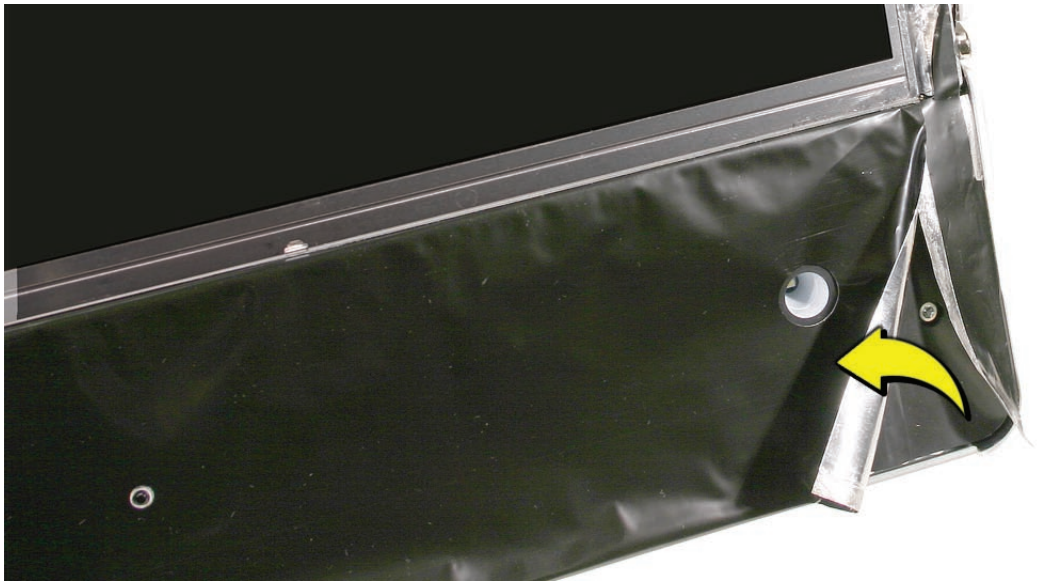
- Access door
- Front bezel

Part Location



Removing the Lower EMI Shield

1. Carefully peel the lower EMI shield off the bottom edge of the rear housing. Use a black stick to help peel back the shield.
2. If replacing a torn or damaged lower EMI shield, peel the lower EMI shield off the bottom edge of the display.



Replacing the Lower EMI Shield

1. Position the lower EMI shield over the bottom of the unit so that the holes in the shield are properly aligned.
2. Press the sticky, top edge of the EMI shield onto the bottom side of the display panel. The crease in the EMI shield should align with the edge of the panel.
3. Fold down the EMI shield and press it firmly over the bottom edge of the rear housing. Use a black stick to rub out wrinkles and ensure that the EMI shield adheres firmly along all edges.
4. Replace the front bezel.
5. Replace the access door.

IR Board

Tools

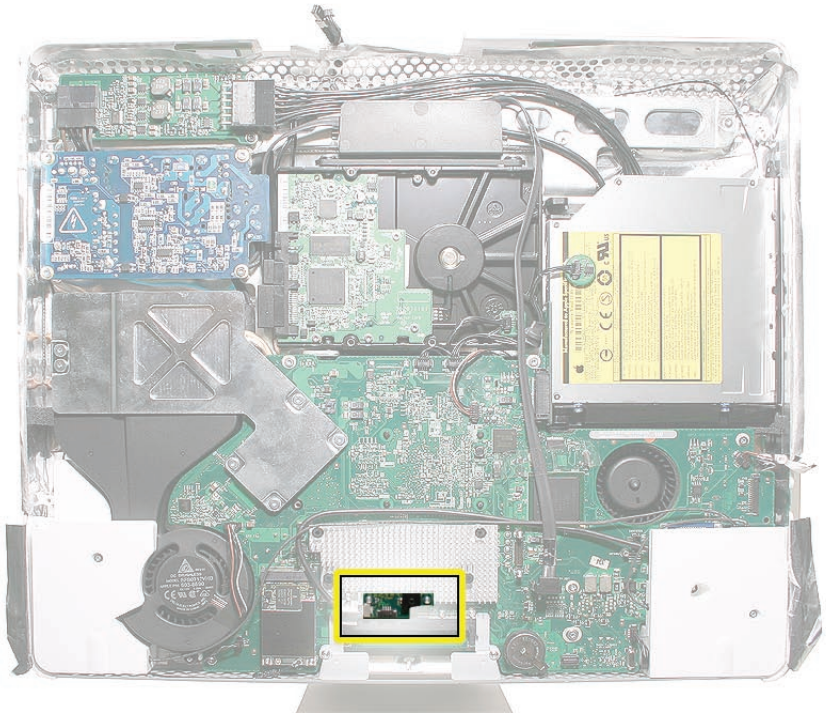
The only tool required for this procedure is a Torx T6 screwdriver (magnetized).

Preliminary Steps

Before you begin, follow steps for removing the following:

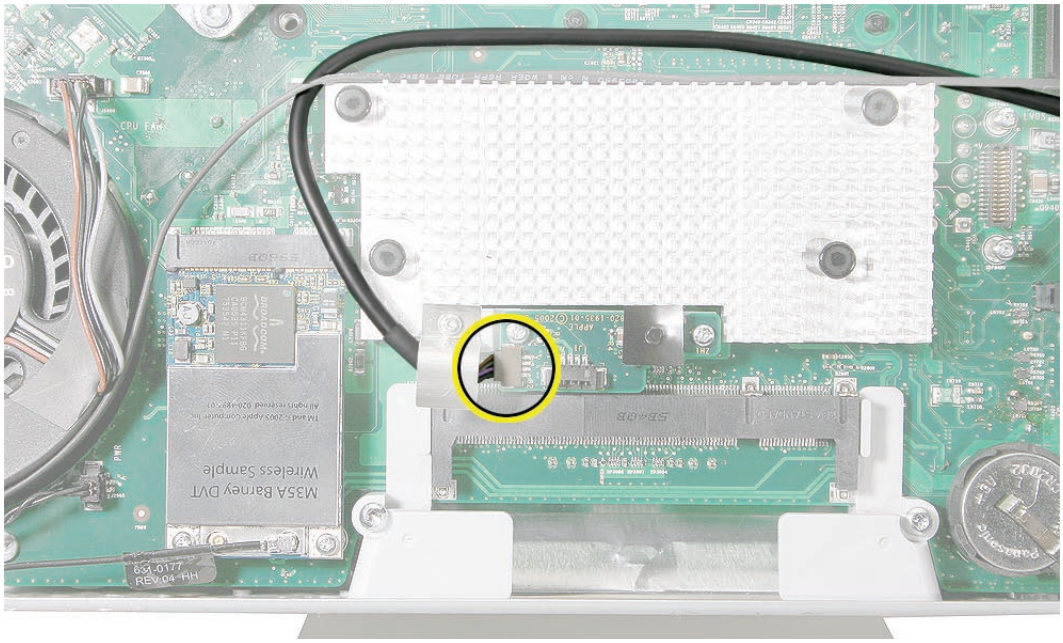
- Access door
- Front bezel
- Lower EMI shield

Part Location

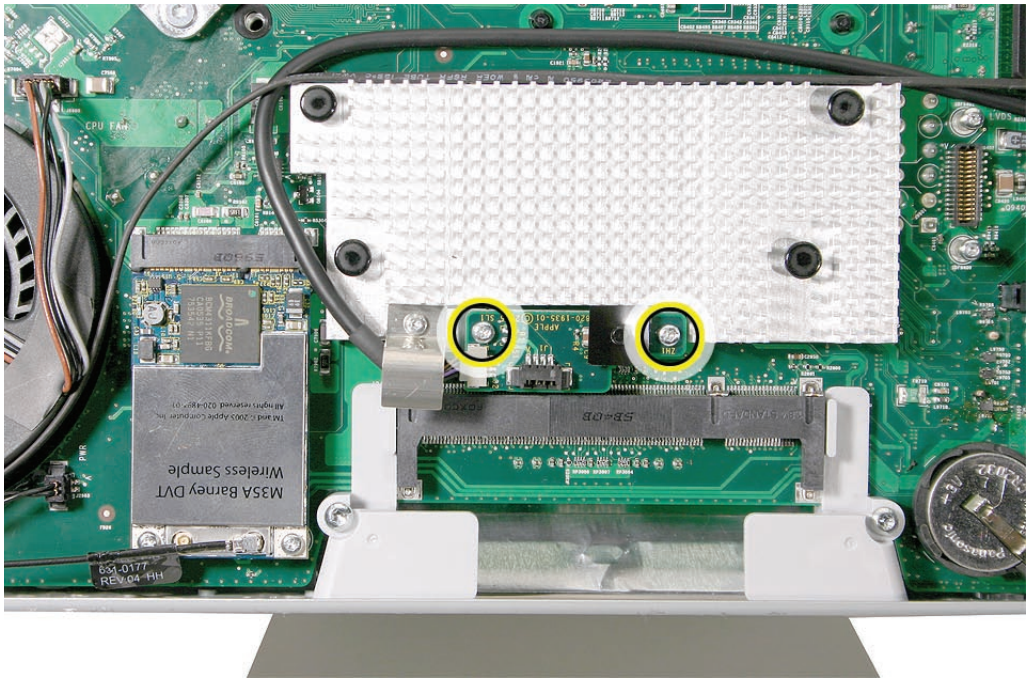


Removing the IR Board

1. Disconnect the IR cable from the IR board connector.



2. Using a Torx T6 screwdriver, remove the two IR board screws. Remove the IR board from its mounting bracket.



Replacing the IR Board

1. Install the IR board and two mounting screws onto its mounting bracket.
2. Connect the IR cable to the IR board connector.
3. Replace the lower EMI shield.
4. Replace the front bezel.
5. Replace the access door.

AirPort Extreme Card

Tools

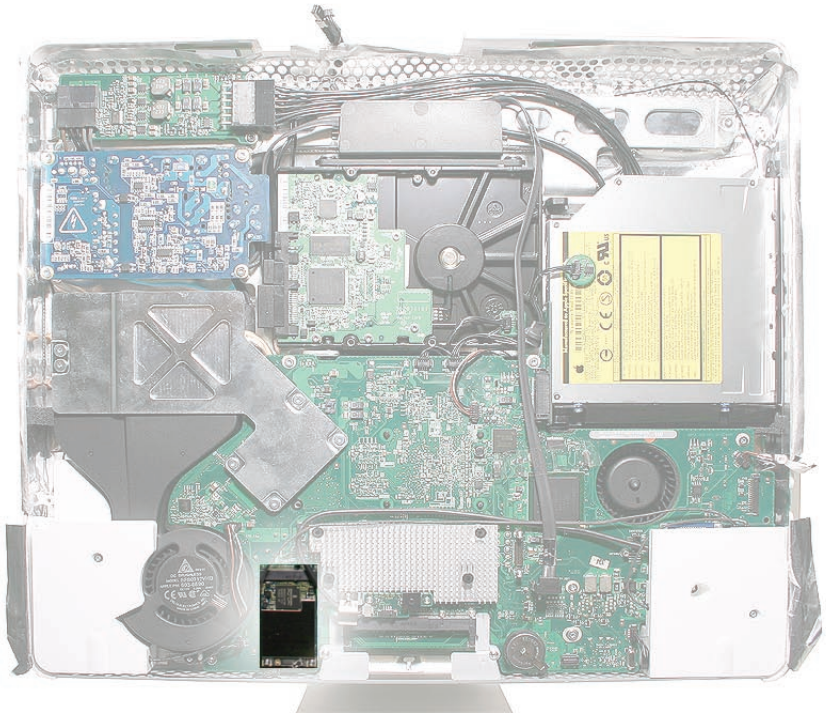
The only tool required for this procedure is a Torx T6 screwdriver (magnetized).

Preliminary Steps

Before you begin, follow steps for removing the following:

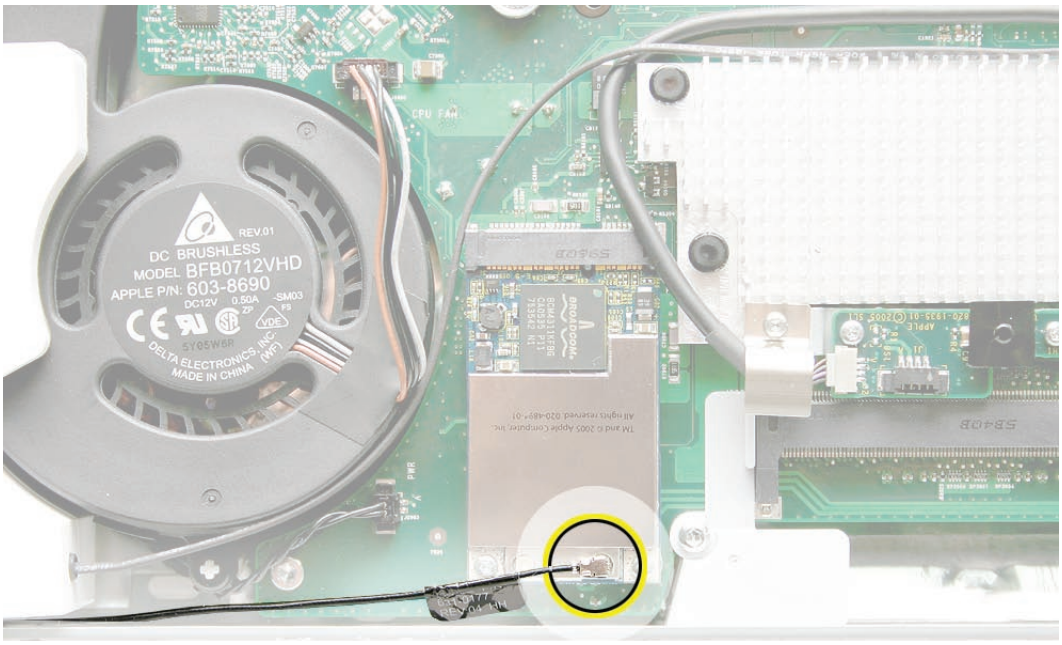
- Access door
- Front bezel
- Lower EMI shield

Part Location

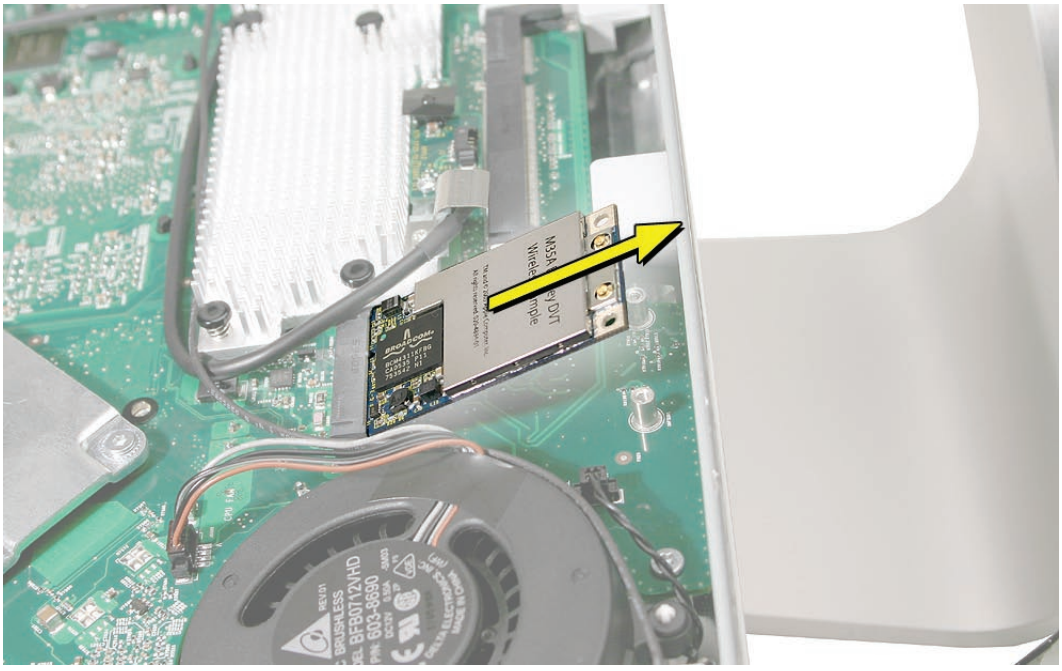


Removing the AirPort Extreme Card

1. Disconnect the antenna cable from the AirPort Extreme card connector and remove the two T6 screws securing the card to the logic board.



2. The card will spring up when the screws are removed. Grab the card from the connector end, pull the card from its socket on the logic board.



Replacing the AirPort Extreme Card

1. Install the AirPort Extreme card into the socket.
2. Install the two mounting screws securing the card to the logic board.
3. Connect the AirPort antenna cable to the connector closest to the memory slot.
4. Replace the lower EMI shield.
5. Replace the front bezel.
6. Replace the access door.

Battery

Tools

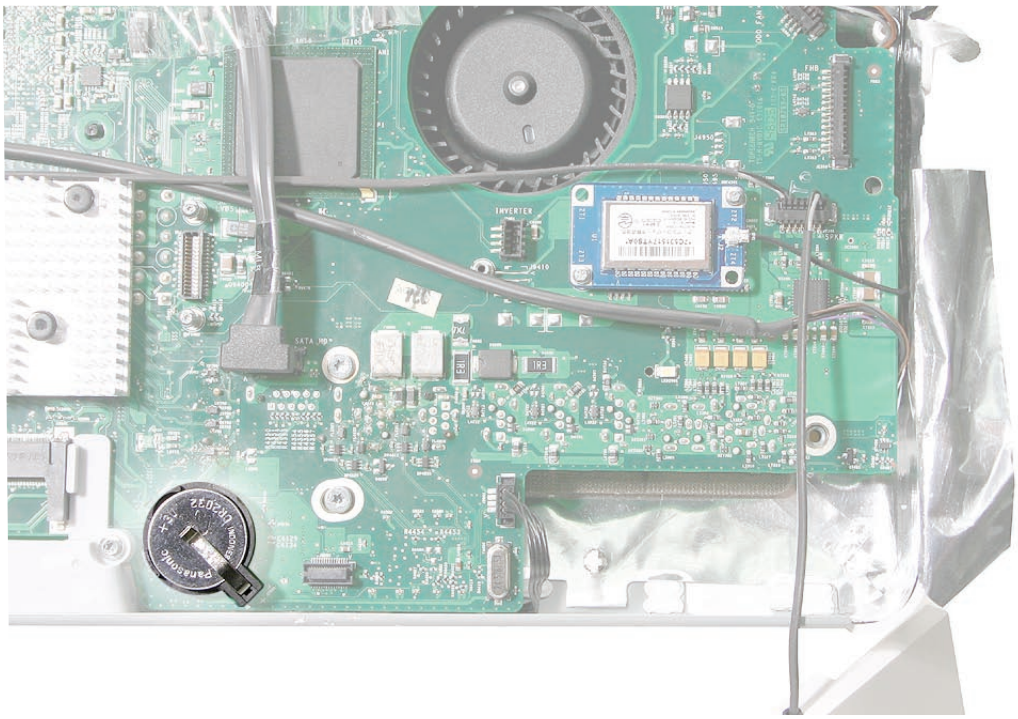
The only tool required for this procedure is a black stick.

Preliminary Steps

Before you begin, follow steps for removing the following:

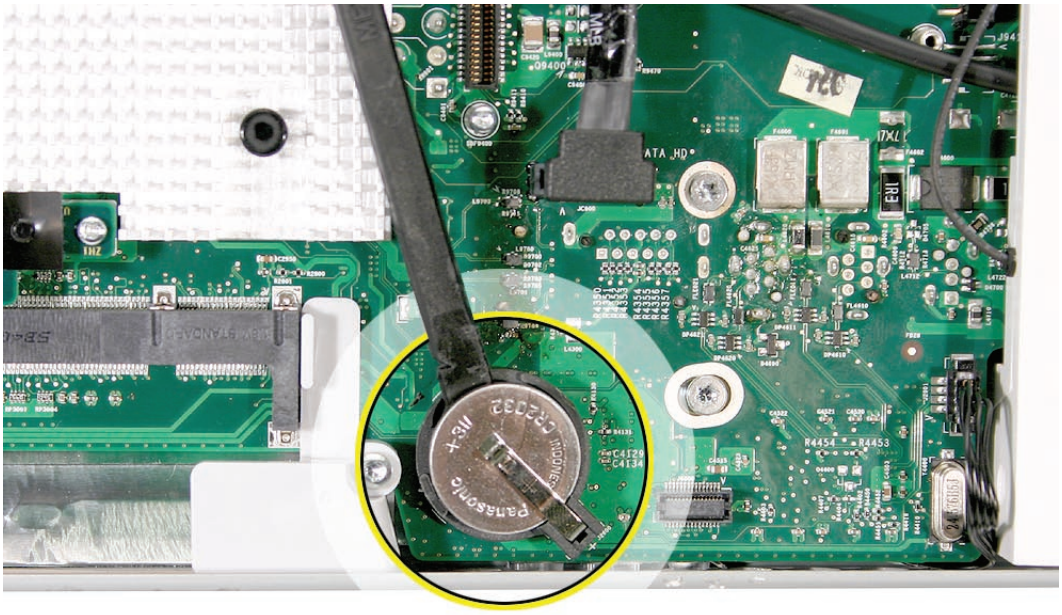
- Access door
- Front bezel
- Lower EMI shield

Part Location



Removing the Battery

1. Pry the battery from the battery slot.



Replacing the Battery

1. Slide the battery (with voltage information face up) under the battery clip.
2. Replace the lower EMI shield.
3. Replace the front bezel.
4. Replace the access door.

LCD Display

Tools

Removing the LCD display requires using the following tools:

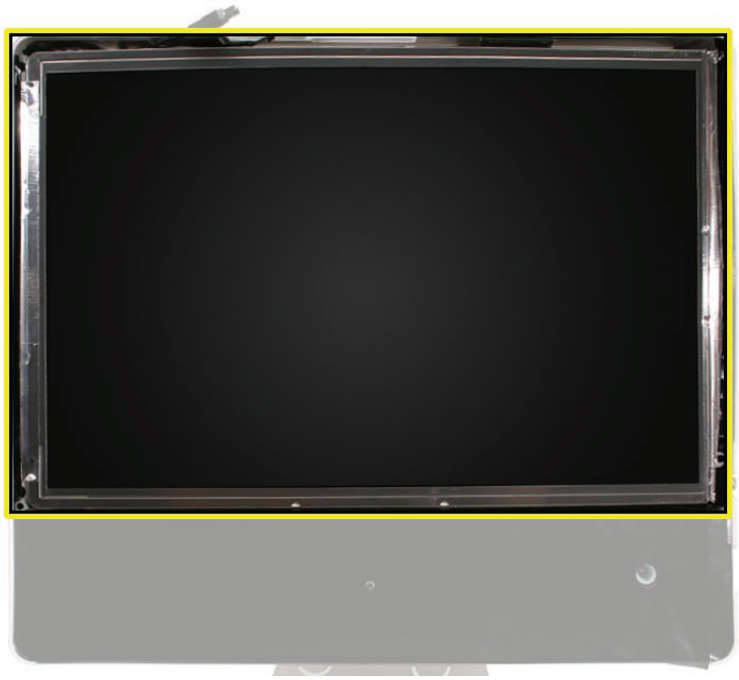
- Torx T10 screwdriver
- Torx T6 screwdriver
- Black stick (or other nonconductive nylon or plastic flat-blade tool)

Preliminary Steps

Before you begin, follow steps for removing the following:

- Access door
- Front bezel
- Lower EMI shield

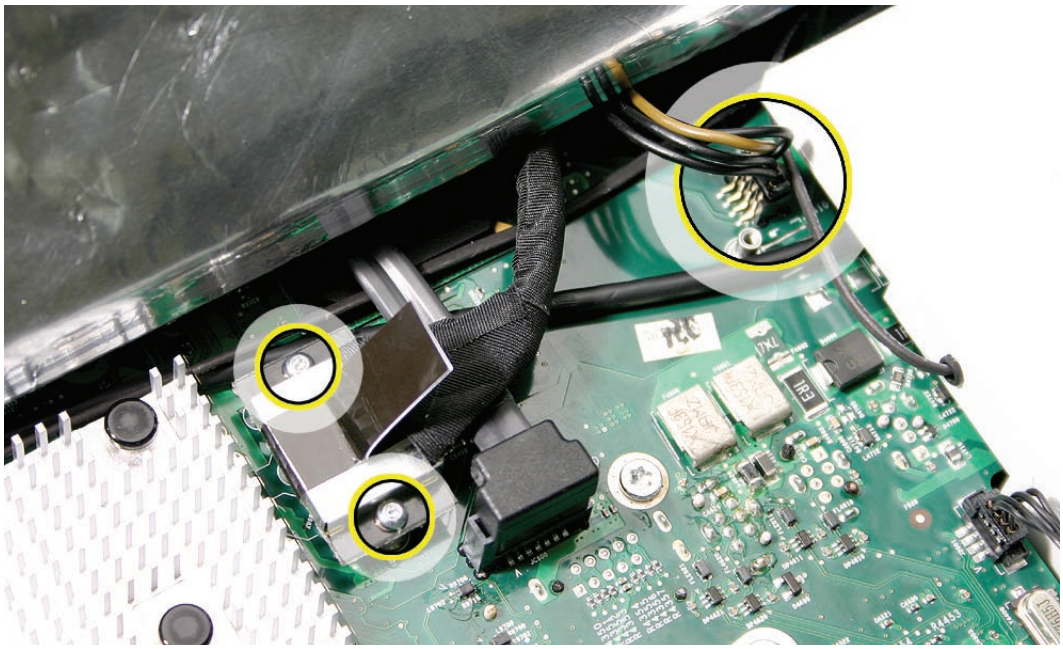
Part Location



Removing the LCD Display

1. Using the black stick, or access tool, carefully peel back the EMI shielding from the left, right, and bottom edges of the computer

2. Using a Torx T6 screwdriver, remove the two LVDS cable connector screws. Disconnect the LVDS display cable from the logic board. To the right of the LVDS connector, disconnect the inverter cable from the logic board.

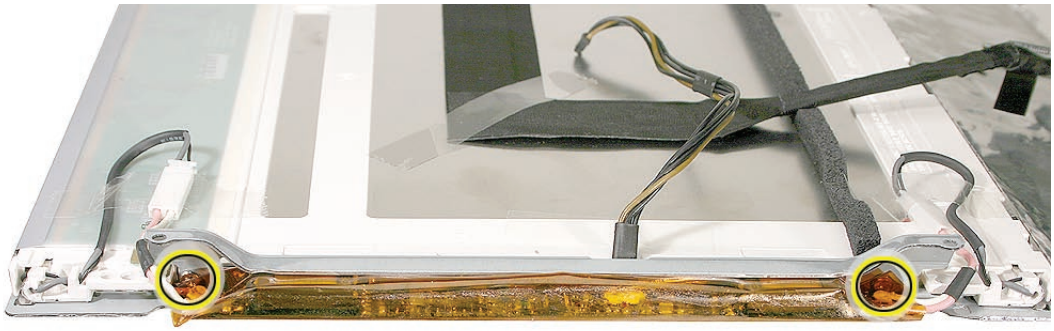


3. Peel the EMI tape away from each side of the panel. Using a Torx T10 screwdriver, remove the four panel mounting screws.

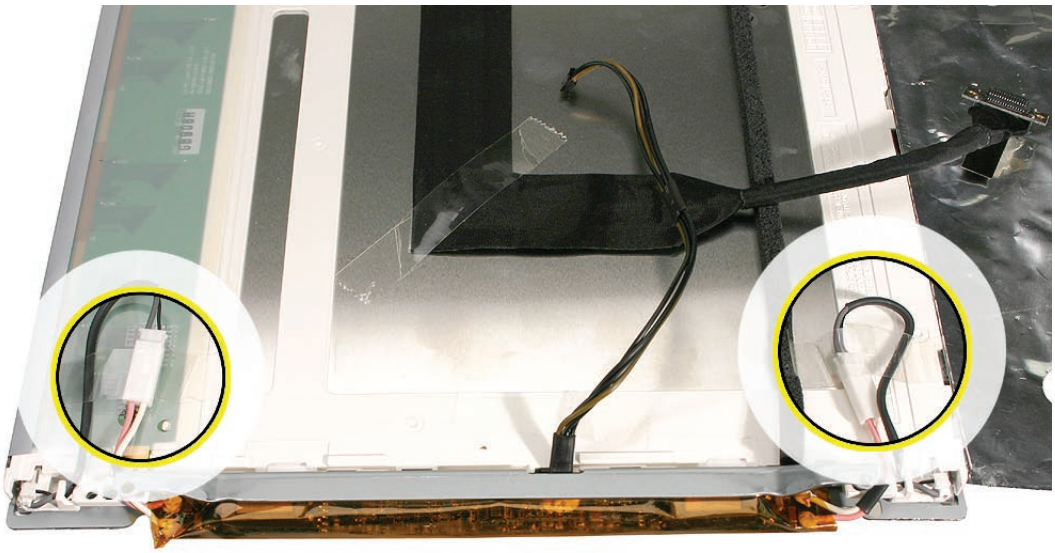
4. Pivot the panel up, as shown, then carefully peel the top edge of the panel away from the EMI shield.

Note: If replacing a bad LCD display, you will also need to remove the lower EMI shield (if still attached), the display panel mounting brackets, and the LVDS cable as follows.

5. If attached, peel the lower EMI shield off the bottom edge of the display panel.
6. Using a torx T10 screwdriver, remove two screws from the left side panel mounting bracket.
7. Using a torx T10 screwdriver, push the tape aside and remove the two mounting screws from the right side panel bracket as shown below.



8. Peel back the tape where shown below, and disconnect the two inverter-to-display cable connectors.



9. Remove the LVDS cable from the rear of the display.
10. Return the panel to Apple. **Note: The panel is a like-for-like exchange.**

Replacing the LCD Display

1. Replace the LVDS cable on the rear of the display panel.
2. Connect the two inverter-to-display cable connectors and tape them to the back of the display panel.
3. Replace the right panel mounting bracket on the display panel with two screws.
4. Replace the left bracket on the display panel with two screws.
   Push aside any cables that could interfere with the display mounting brackets when lowered into position.
5. Make sure the inverter cable extends beyond the bottom of the display panel, and install the panel with the mounting bracket screw holes and the screw mounts aligned.
6. Secure the panel with four mounting screws.
7. Connect the inverter cable connector.
8. Connect the LVDS cable connector and secure it with two screws.
9. Fold the EMI tape firmly over the left, top, and right edges of the display panel. Use the black stick to adhere the tape firmly and rub out wrinkles.
10. Replace the lower EMI shield.
11. Replace the front bezel.
12. Replace the access door.

LVDS Display Cable

Tools

Removing the LVDS cable requires using the following tools:

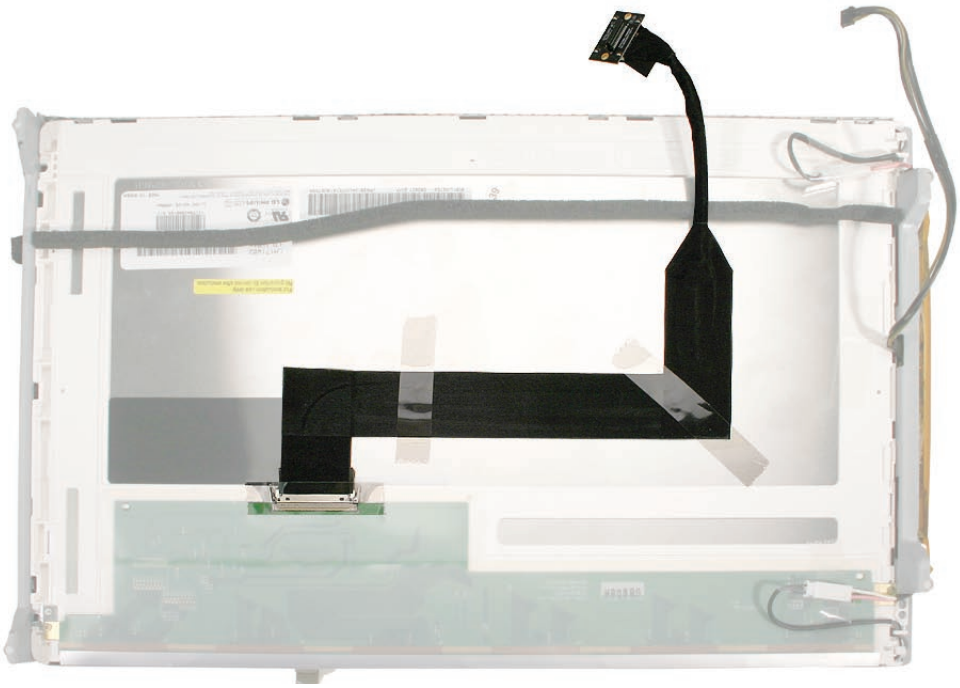
- Torx T8 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

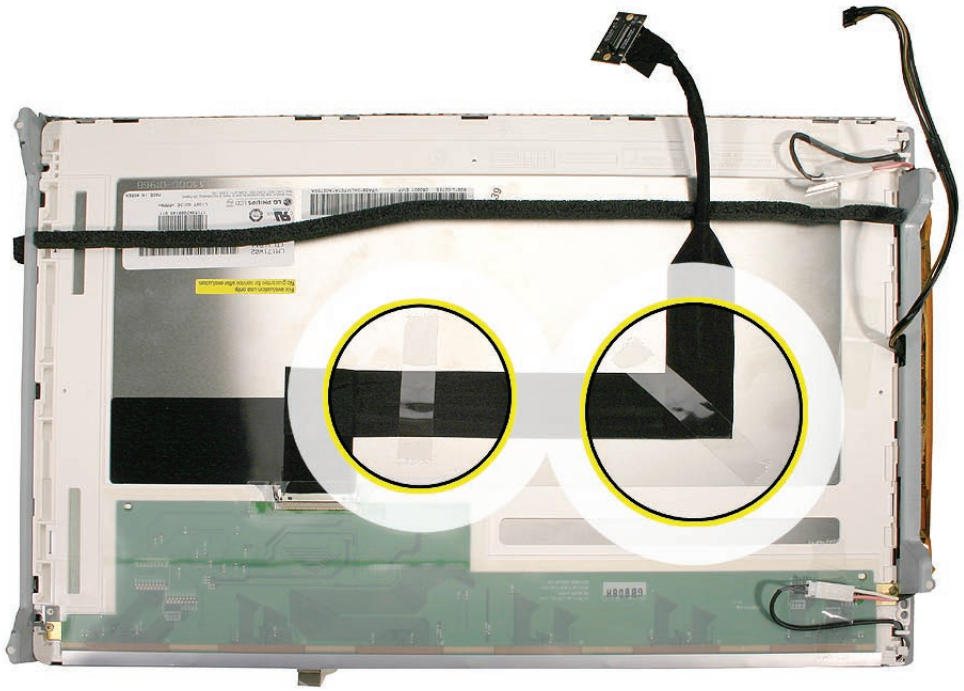
- Access door
- Front bezel
- Lower EMI shield
- LCD Display

Part Location

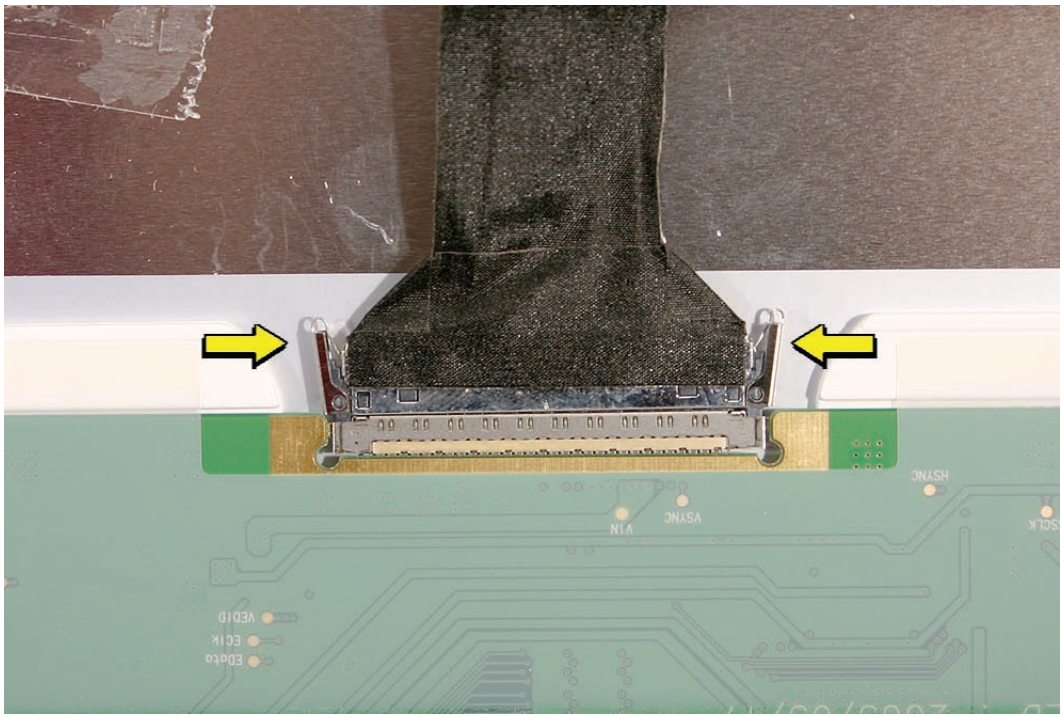


Remove the LVDS Cable

1. Locate the LVDS cable on the back side of the display panel, and remove the pieces of tape that secure the cable to the panel. Also, carefully remove the tape securing the LVDS connector to the panel connector.



2. Pinch together the connector locking levers, and disconnect the LVDS cable connector.



Replacing the LVDS Cable

1. Position the LVDS cable on the back of the display panel as shown in the Part Location photo above.
2. Connect the LVDS cable connector. When connected correctly the locking levers will secure the connector and it cannot be disconnected without depressing the levers.
3. Secure the LVDS cable to the panel with four strips of tape.
4. Replace the display panel.
5. Replace the lower EMI shield.
6. Replace the front bezel.
7. Replace the access door.

Inverter

Tools

Removing the inverter requires using a flat-blade screwdriver

Preliminary Steps

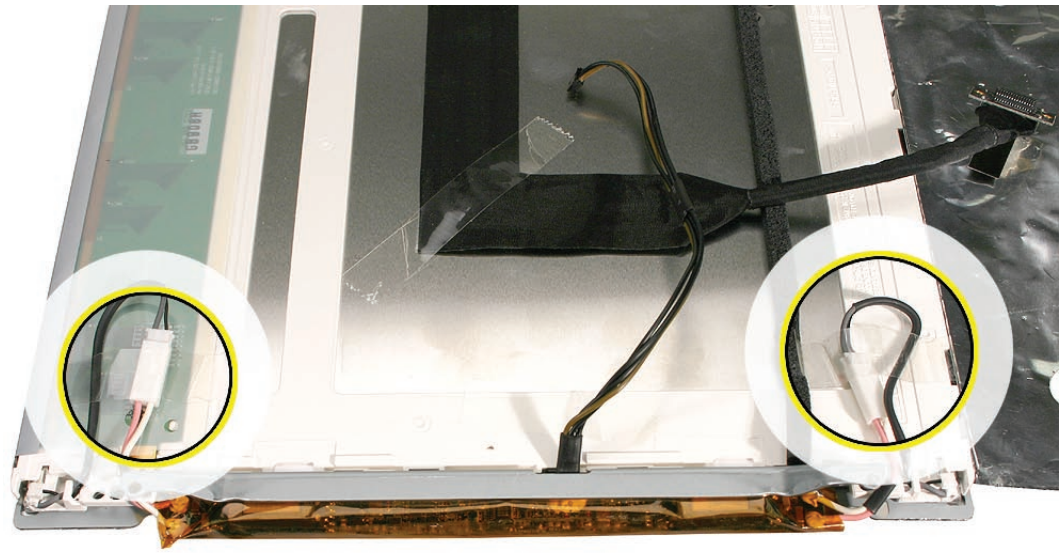
Before you begin, follow steps for removing the following:

- Access door
- Front bezel
- Lower EMI shield
- LCD Display

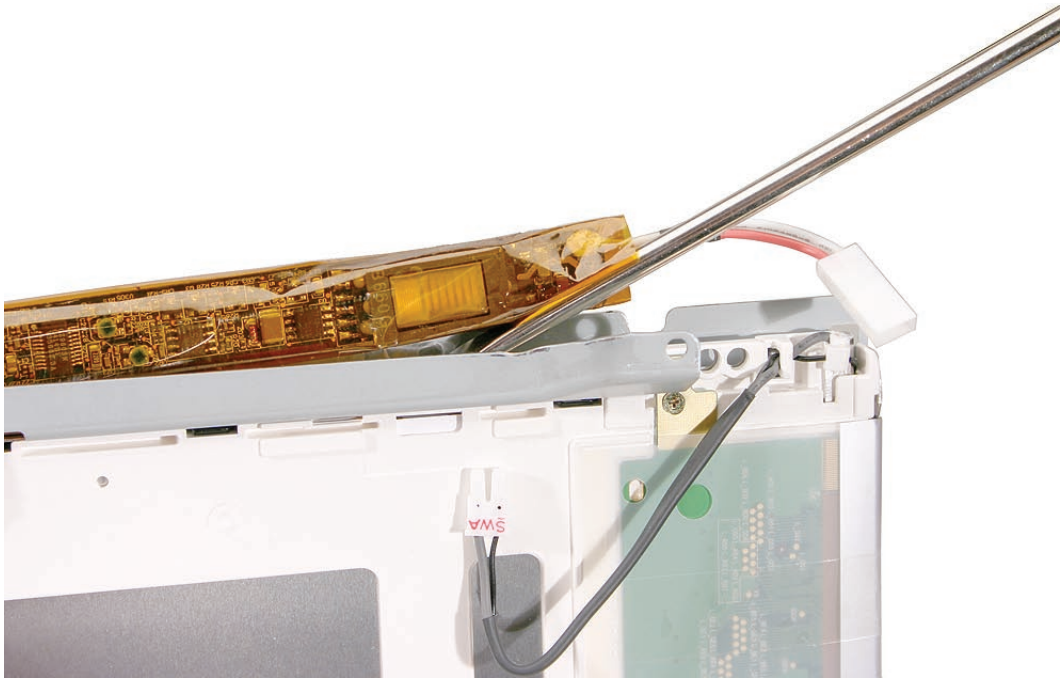
Part Location

Removing the Inverter

1. Remove two pieces of tape that secure the inverter cables to the back of the display panel, and disconnect the inverter connectors where shown.

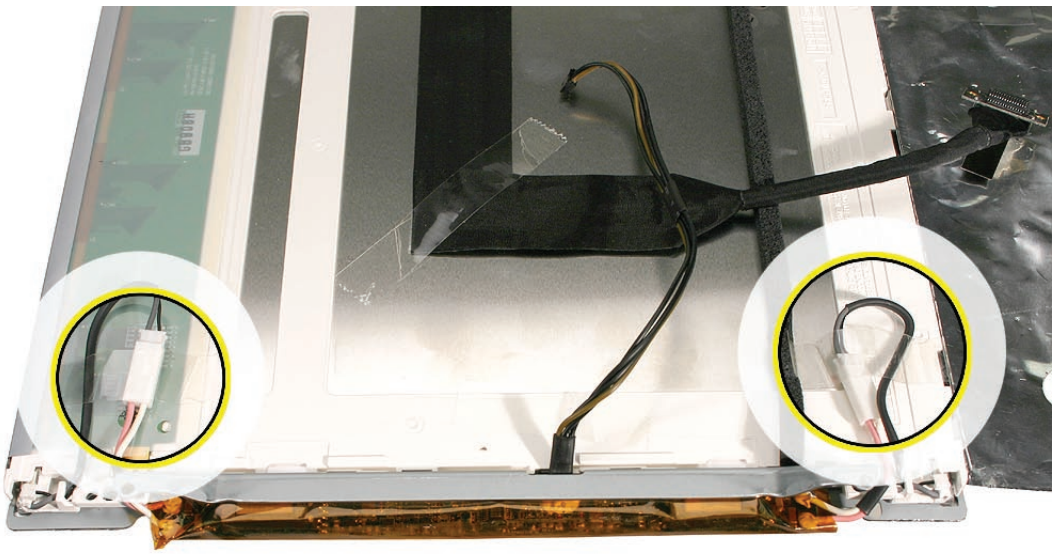


2. Using a flat-blade screwdriver as shown, pry up the inverter to remove it from inside the display panel mounting bracket.



Replacing the Inverter

1. Insert the inverter cable through a hole at the back center of the right mounting bracket, and press the sticky side of the replacement inverter onto the back edge of the bracket.
2. Connect the inverter-to-display cables and tape them to the back of the display panel.



.

3. Replace the display panel.
4. Replace the lower EMI shield.
5. Replace the front bezel.
6. Replace the access door.

Speakers

Tools

Removing the speaker requires using the following tools:

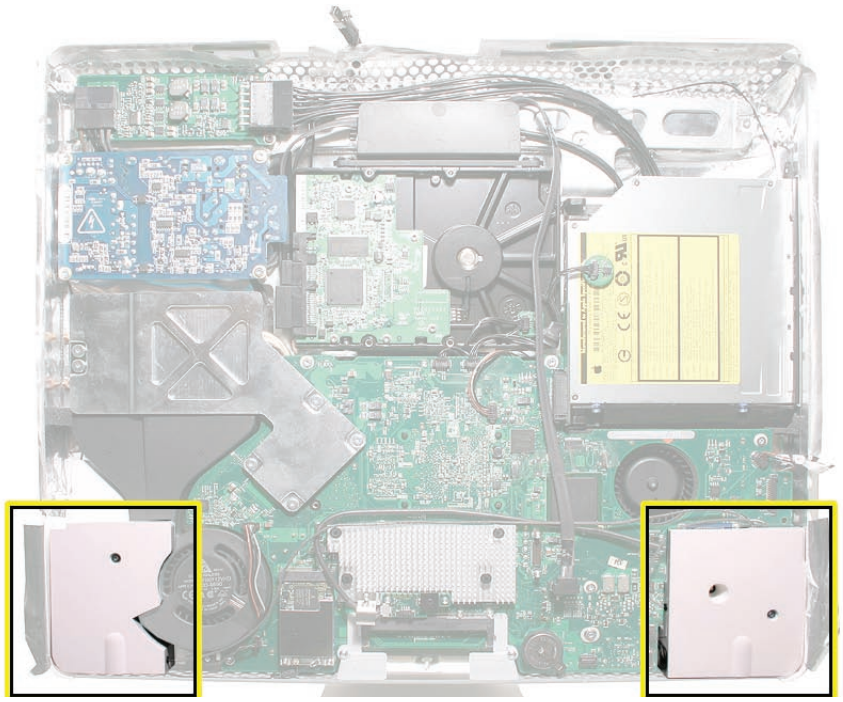
- Torx T10 screwdriver (magnetized)
- Torx T6 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

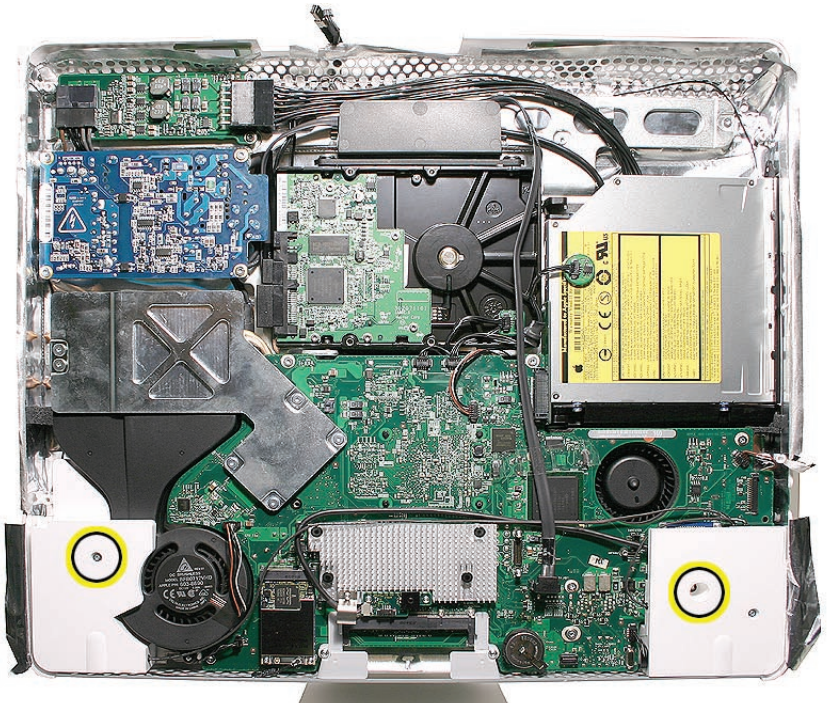
- Access door
- Front bezel
- Lower EMI shield
- LCD Displayy

Part Location

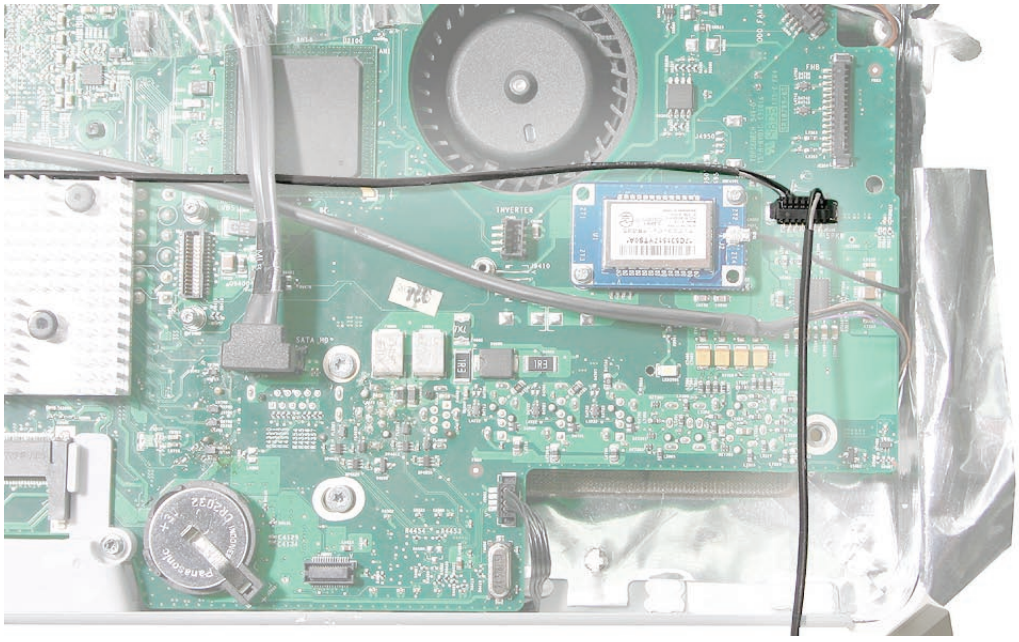


Removing the Speakers

1. Using a T10 torx screwdriver, remove the screws from the left and right speakers.
   Replacement Note: The longer of the two speaker mounting screws is used to secure the left speaker; the shorter screw secures the right speaker.



2. Lift the speakers straight up and disconnect the speaker cable under the right speaker.



Replacing the Speakers

1. Connect the speaker cable connector to the logic board.
2. Install the speakers and route the speaker wire above the heatsink and around the fan.
3. Secure the right speaker with the shorter of the two mounting screws.
4. Secure the left speaker with the longer of the two mounting screws.
5. Replace the display panel.
6. Replace the EMI shield.
7. Replace the front bezel.
8. Replace the access door.

Bluetooth Card

Tools

Removing the Bluetooth card requires using the following tools:

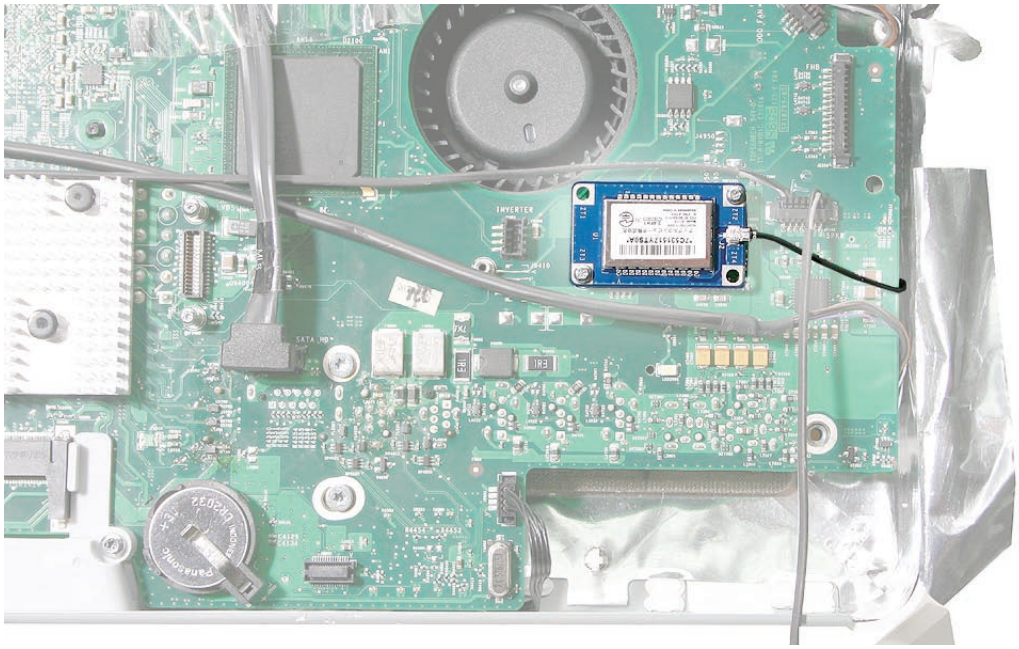
- Torx T6 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

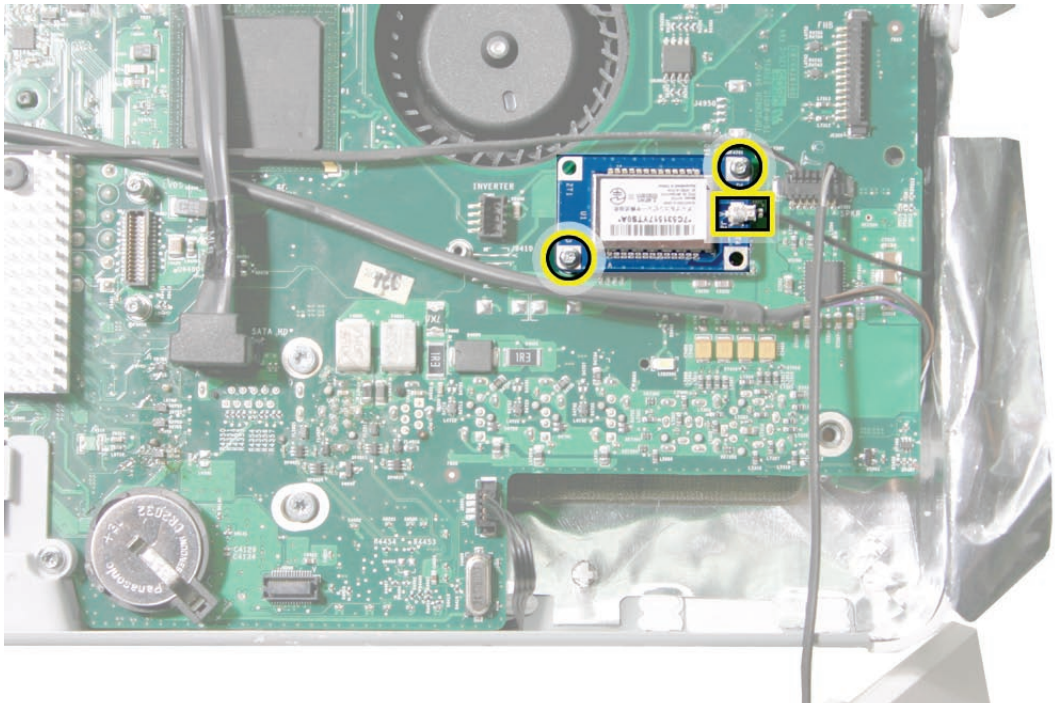
- Access door
- Front bezel
- Lower EMI shield
- LCD Displayy
- Speakers

Part Location



Remove the Bluetooth Card

1. Using a T6 torx screwdriver, remove the mounting screws from Bluetooth card and gently disconnect the Bluetooth antenna from the connector on the card.



2. Lift the Bluetooth card straight up and off the logic board connector.

Replacing the Bluetooth Card

1. Connect the card to the logic board.
2. Attach the Bluetooth antenna to the Bluetooth card.
3. Replace the two T6 screws on the Bluetooth card.
4. Connect the speaker cable connector to the logic board,
5. Secure the right speaker with the smaller of the two mounting screws.
6. Secure the left speaker with the longer of the two mounting screws.
7. Replace the display panel.
8. Replace the EMI shield.
9. Replace the front bezel.
10. Replace the access door.

Optical Drive

Tools

Removing the optical drive requires using the following tools:

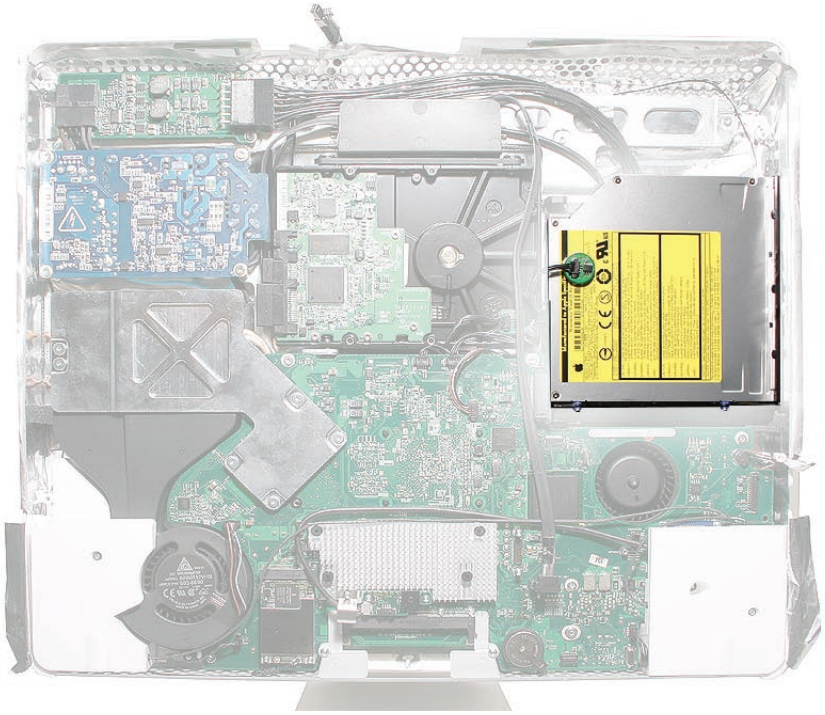
- Torx T10 screwdriver (magnetized)
- Torx T6 screwdriver (magnetized)
- Flat-blade screwdriver

Preliminary Step

Before you begin, follow steps for removing the following:

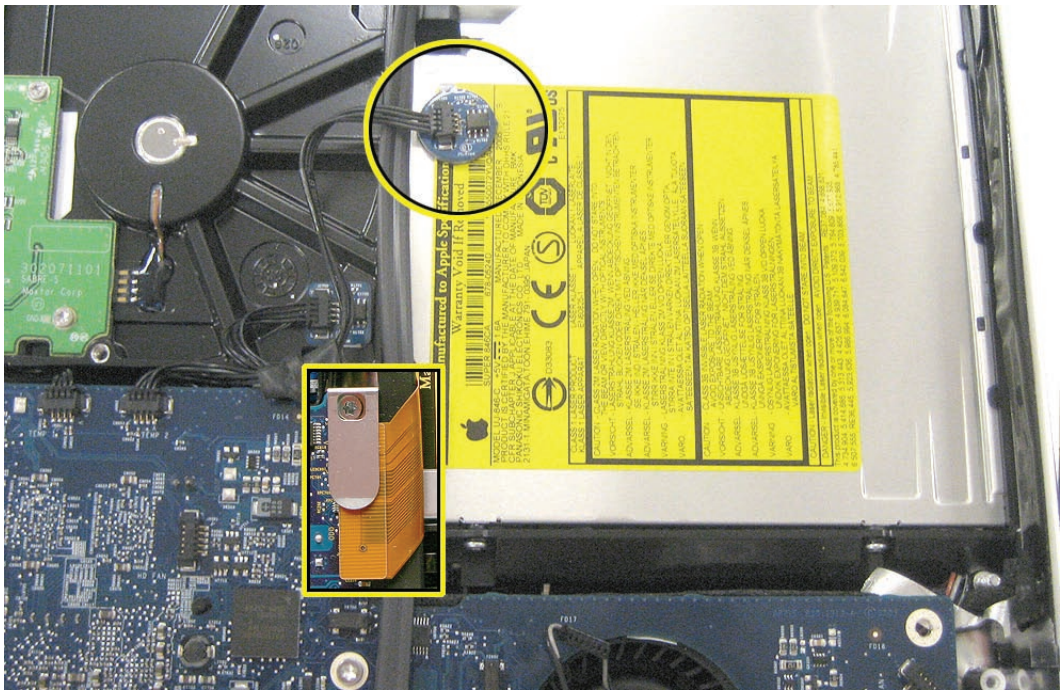
- Access door
- Front bezel
- Lower EMI shield
- LCD Display

Part Location

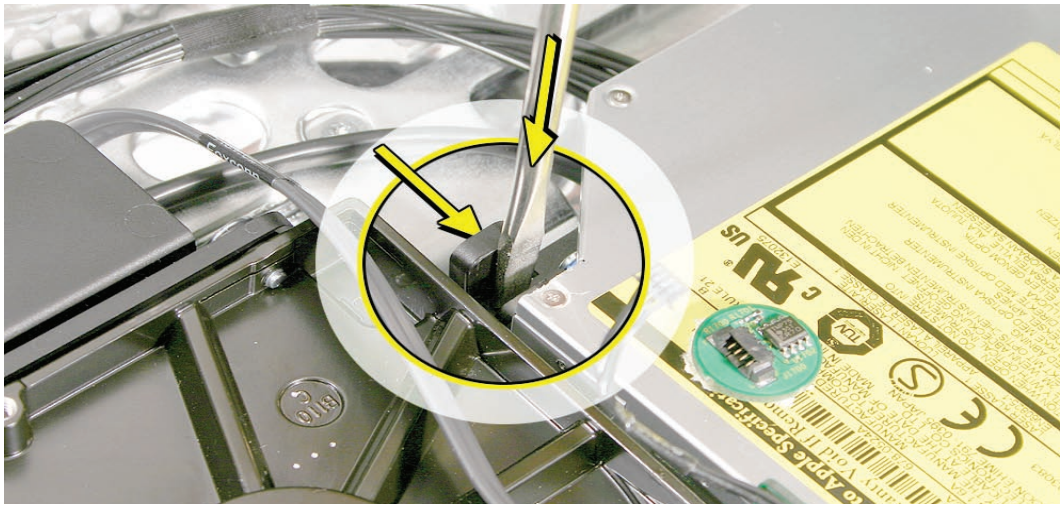


Removing the Optical Drive

1. Disconnect the sensor cable from the temperature sensor on the top of the optical drive. Use a T10 screwdriver to remove the screw on the flexible cable mounting clip. Disconnect the flexible cable.



2. Locate the black tabs at each side of the plastic optical drive mounting bracket. Using a flat-blade screwdriver as shown, press down on the mounting bracket at the base of the release tab, while pushing the release tab toward the center of the drive. Repeat process to unhook the other release tab from the chassis.



Caution: Never press down on or grasp the body (silver) of the optical drive when removing or installing it. Depressing the body of the optical drive could damage the mechanism. Grasp the optical drive by its mounting bracket only.

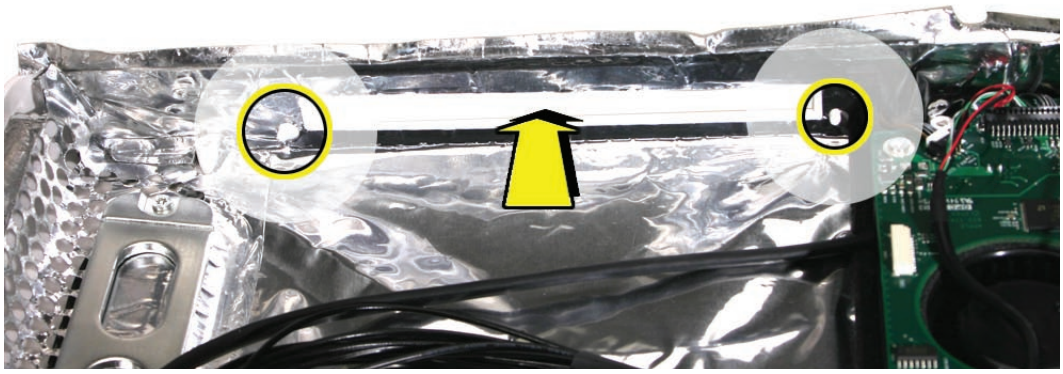
3. Lift the rear of the drive and pull the front bezel of the drive straight back and out of the access hole in the housing.

4. If replacing a bad optical drive, use a T6 torx screwdriver to remove two flex cable mounting screws. Disconnect and keep the flex cable for installation on the replacement drive.

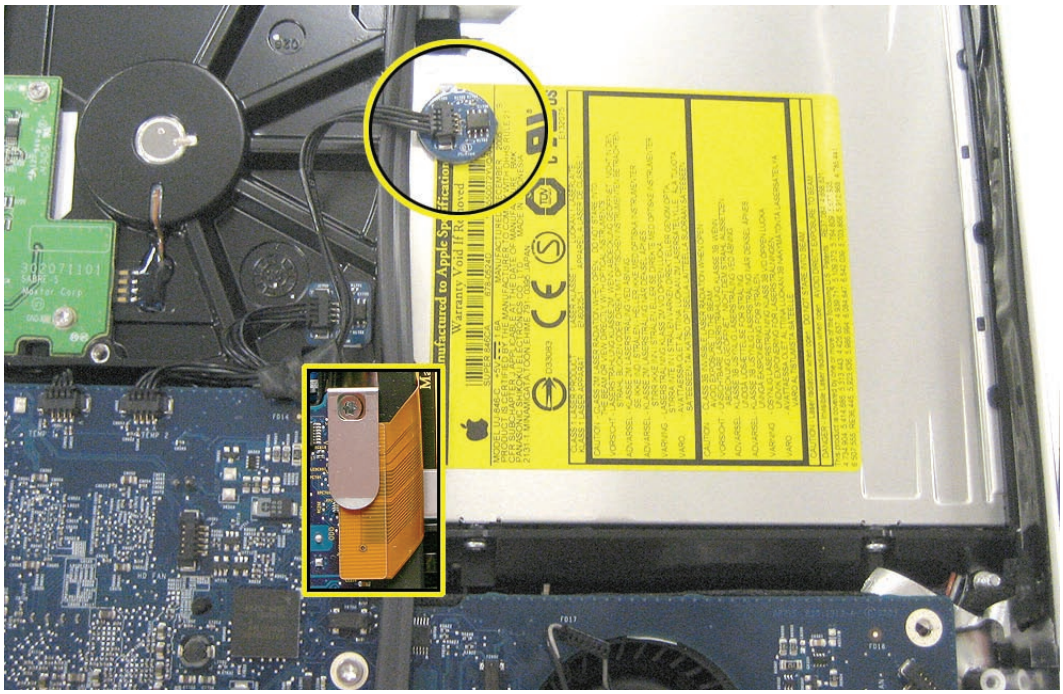
5. If replacing a bad optical drive, remove the temperature sensor from the top of the drive. Discard the sensor—the replacement drive comes with a new sensor already installed.

Replacing the Optical Drive

1. If necessary, install the flex cable to the optical drive with two screws.
2. Insert the optical drive bezel-end-first into the access hole in the housing. Be sure to align the two guide holes in the front bezel with guide posts at each end of the drive access hole.



3. Push down on the mounting bracket to lock the optical drive securely into place on the chassis.
   Caution: Never press down on or grasp the body (silver) of the optical drive when removing or installing it. Depressing the body of the optical drive could damage the mechanism. Grasp the optical drive by its mounting bracket only.
4. Connect the optical drive flex cable and secure it with the flex cable mounting clip and screw.



5. Replace the display panel.
6. Replace the lower EMI shield.
7. Replace the front bezel.
8. Replace the access door.

Hard Drive

Tools

Removing the hard drive requires using the following tools:

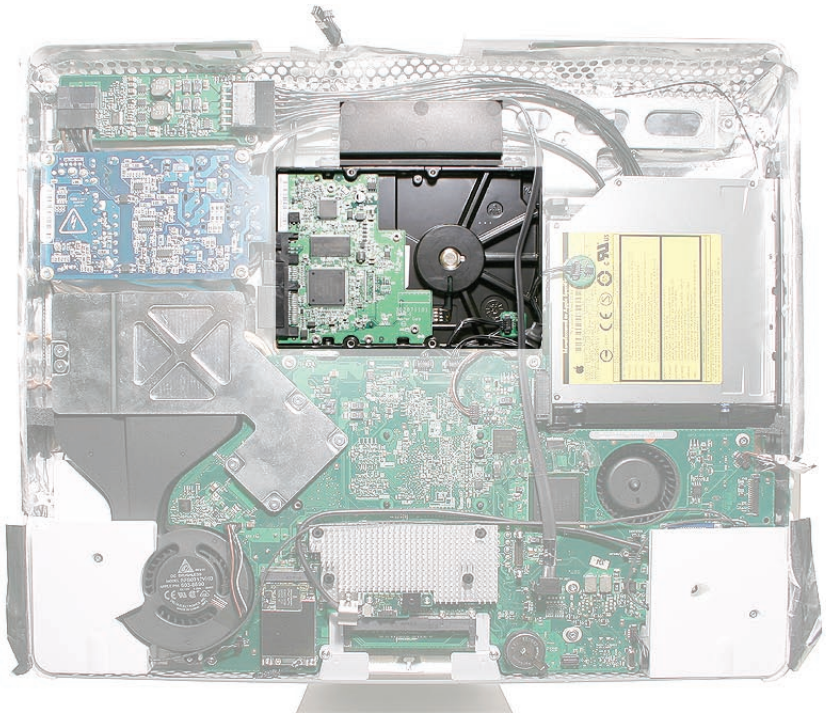
- Torx T8 screwdriver (magnetized)
- Flat-blade screwdriver

Preliminary Steps

Before you begin, follow steps for removing the following:

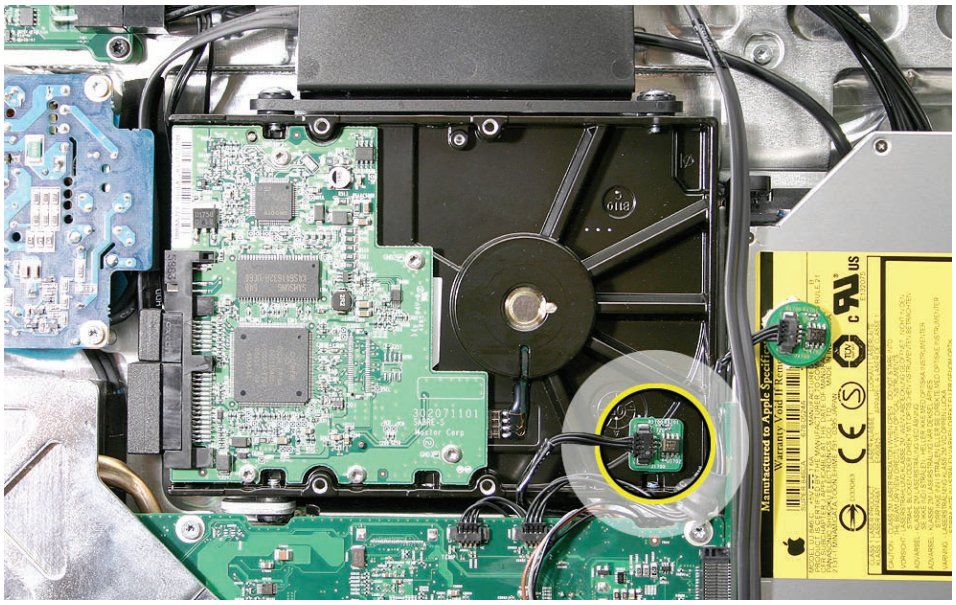
- Access door
- Front bezel
- Lower EMI shield
- LCD Display

Part Location



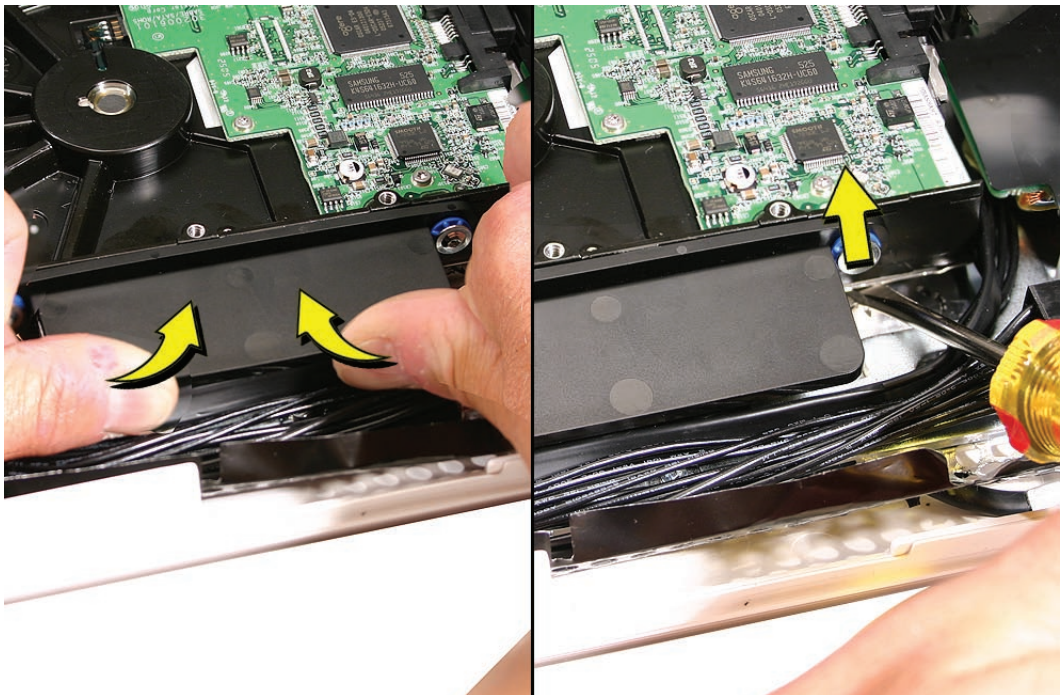
Remove the Hard Drive

1. Disconnect the sensor cable from the temperature sensor on top of the hard drive.

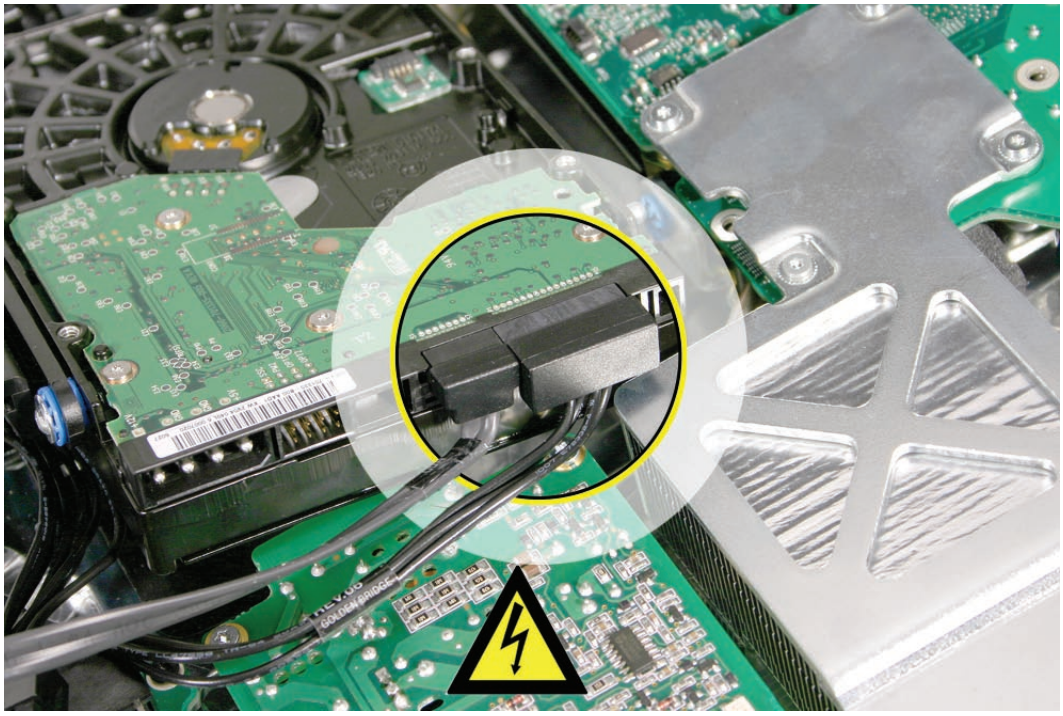


2. **Note**: If you are replacing the hard drive, transfer the temperature sensor to the replacement hard drive. Use the double-stick tape enclosed with the replacement hard drive to attach the sensor. Continue on to the next step.

3. Position yourself at the top side of the unit closest to the hard drive mounting bracket. Grasp the mounting bracket as shown, and push in on the edge of the bracket until you feel it release. If the bracket doesn't release, use a flat-blade screwdriver to pry up on the bottom of the mounting bracket to help release it.

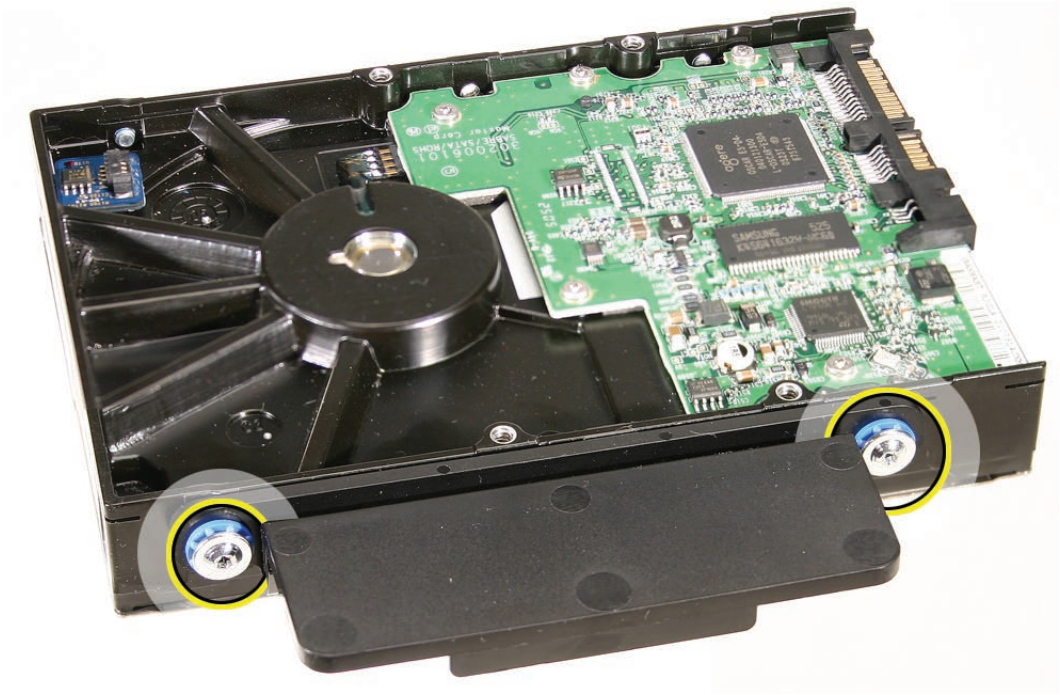


4. Disconnect the hard drive power and data cables. Lift the hard drive out of the chassis.

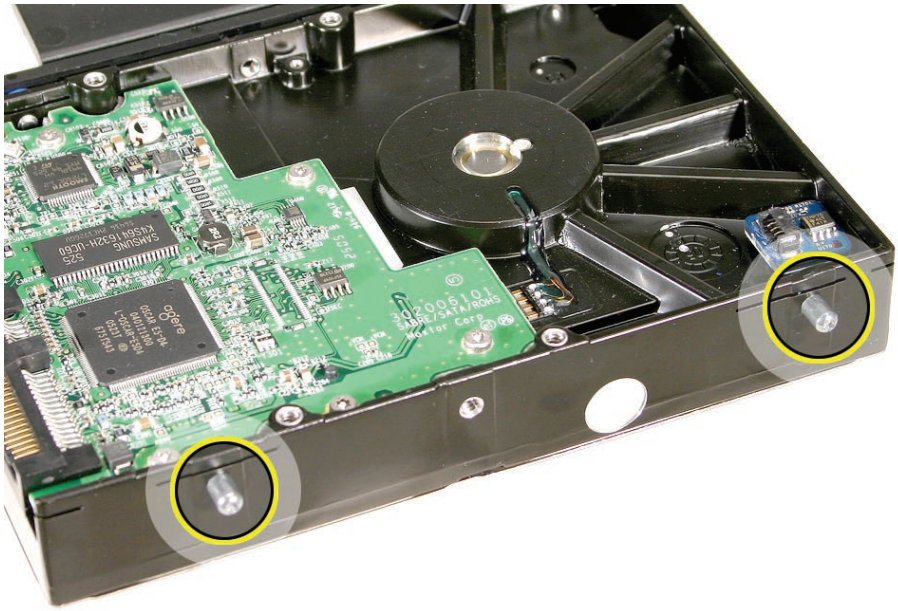


5. **Replacement Note:** If you are replacing a bad hard drive, transfer the temperature sensor, mounting bracket, and mounting pins before returning the defective drive to Apple.

6. Using a T8 torx screwdriver, remove two screws and the mounting bracket from the drive.



7. Using a T8 torx screwdriver, remove two mounting pins from the other side of the drive.



8. Transfer the temperature sensor to the replacement drive if you haven't done so already.

Replacing the Hard Drive

1. Install two mounting pins to the side of the hard drive.
2. Install the mounting bracket to the side of the hard drive with two screws.
3. Secure the temperature sensor to the top of the hard drive.
4. Connect the temperature sensor cable to the sensor. Make sure the other end of the sensor cable is connected to the logic board.
5. Connect the hard drive power and data cables.
6. Insert the hard drive pins into the grommets. Lower the drive into the rear housing
7. Make sure the hard drive power and data cables are routed around the drive and beneath the hard drive mounting bracket. Press down on the mounting bracket to lock it in place on the chassis.
8. Replace the display panel.
9. Replace the lower EMI shield.
10. Replace the front bezel.
11. Replace the access door.

DC-DC Board

Tools

Removing the dc-dc board requires using the following tools:

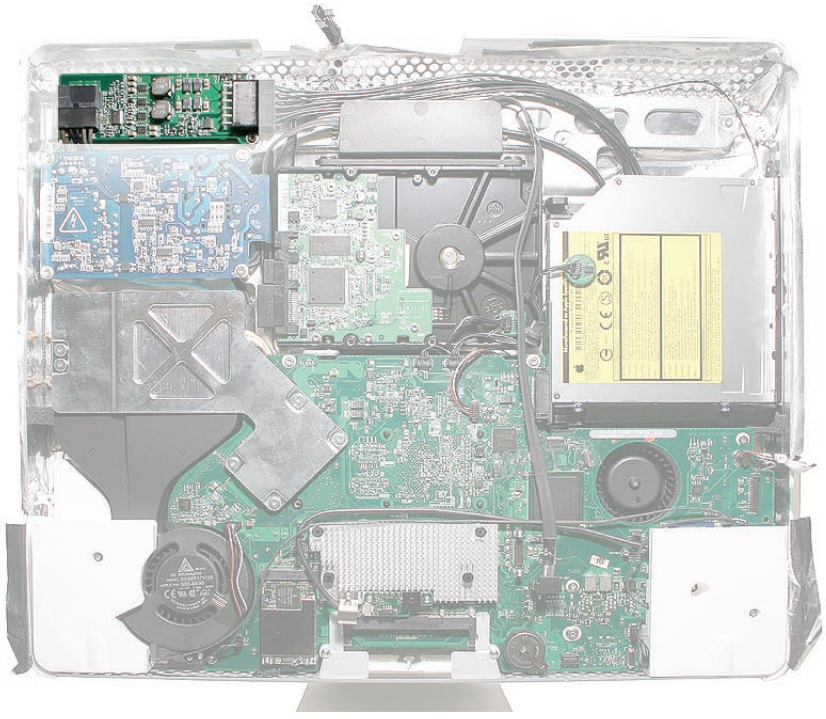
- Torx T10 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

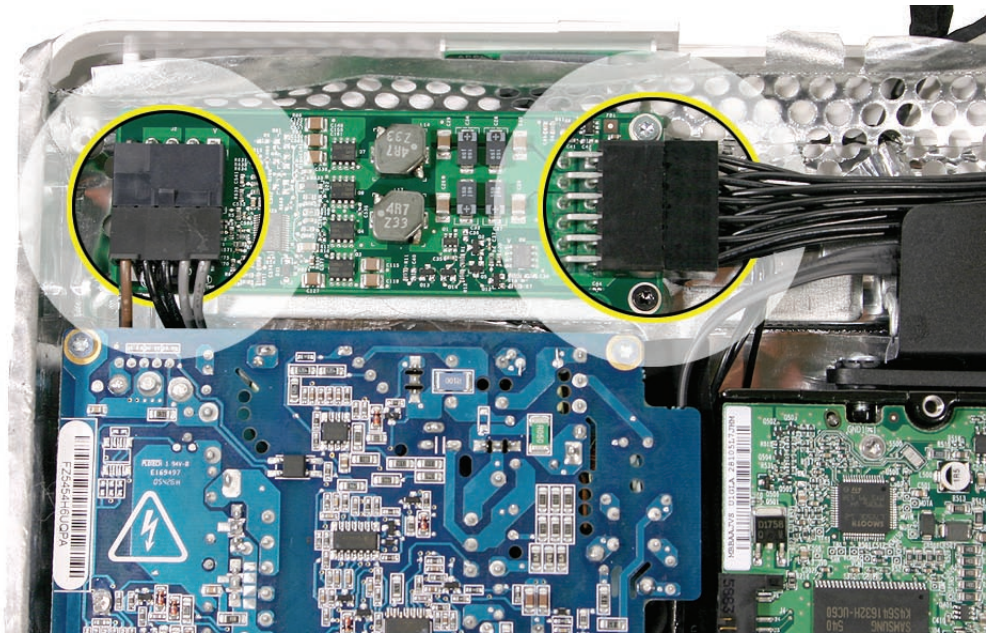
- Access door
- Front bezel
- Lower EMI shield
- LCD Display

Part Location

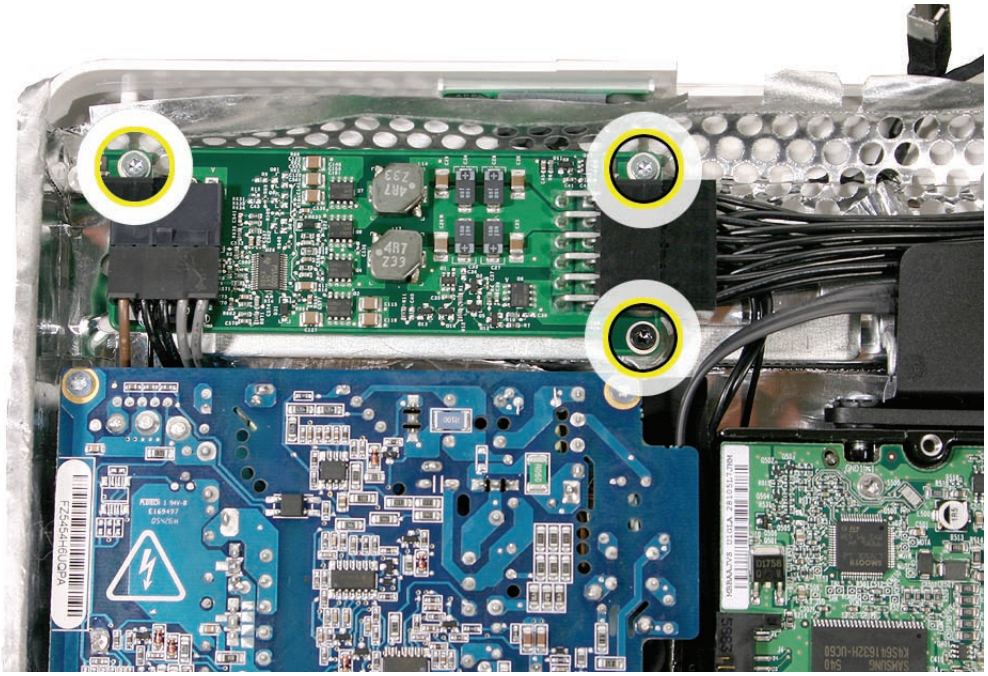


Removing the DC-DC Board

1. Disconnect the power supply cable and the DC power cable from the DC-DC board.



2. Using a T10 torx screwdriver, remove the self-tapping screw from the top corner of the DC-DC board and the black self-tapping screw below it. Lift the board straight up to remove it.



Replacing the DC-DC Board

1. Position the DC-DC board and install the long black self-tapping screw in the lower right corner, and the screw in the top right corner.
2. Connect the DC power cable and the power supply cable to connectors on the DC-DC board.
3. Replace the display panel.
4. Replace the lower EMI shield.
5. Replace the front bezel.
6. Replace the memory access door.

Power Supply

Tools

Removing the power supply requires using the following tools:

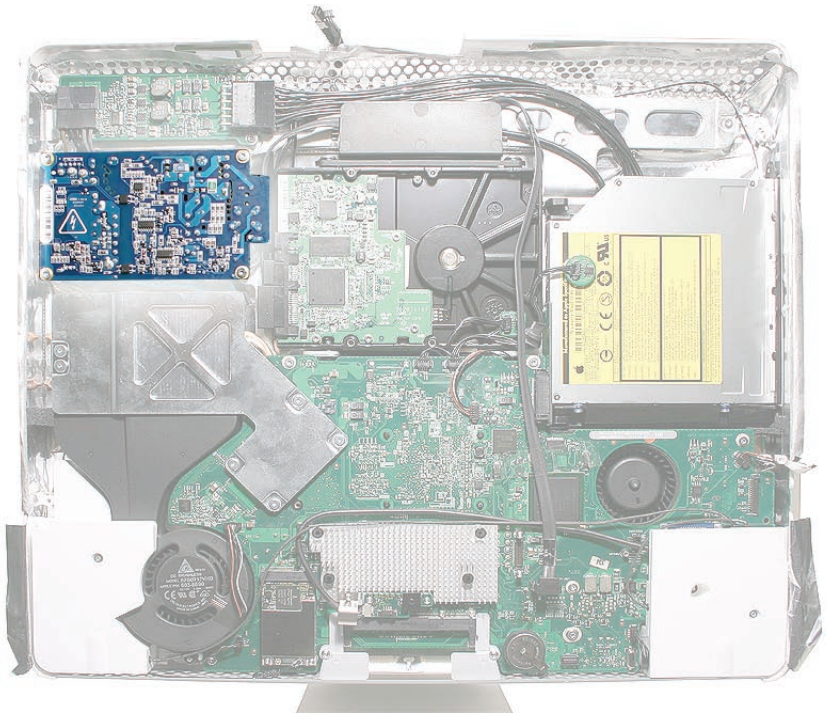
- Torx T10 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- Hard drive

Part Location



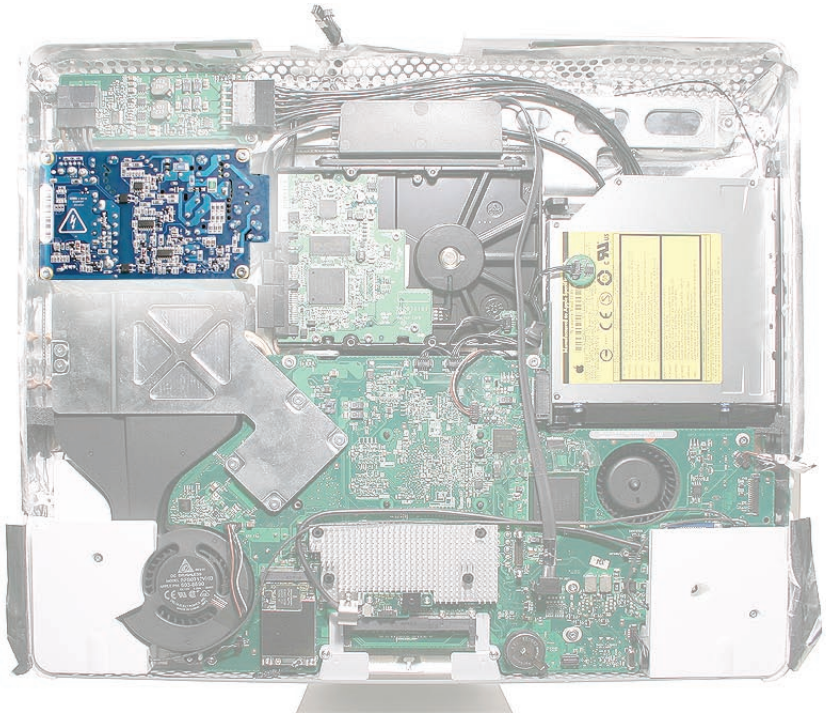
About the Power Supply

Warning: When the iMac is under power, be aware that the power supply contains high voltages that pose a potential hazard to your personal safety. Never work on or near the power supply with the unit powered on, and as a further precaution always make sure the unit is unplugged when working on it with the front bezel removed.

WARNING: HIGH VOLTAGE
Text or photographs marked by this symbol indicate that a potential hazard to your personal safety exists from a high voltage source.

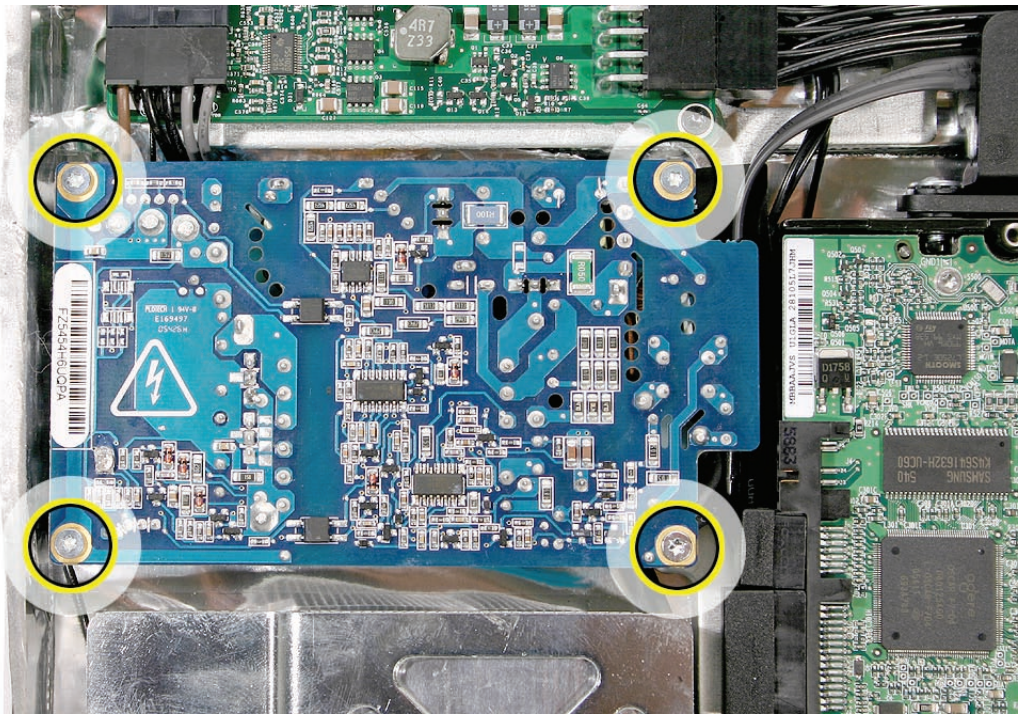
The AC/DC power supply board is a high voltage source with the unit under power, and remains powered up whenever the system is plugged in, whether or not the system is turned on. Use extreme caution when troubleshooting the system with the front bezel removed.

- Disconnect power to the system before performing maintenance.
- Don't work alone. In the even of an electrical shock it is important to have another individual present who can provide assistance.
- Keep one hand in your pocket when working on any iMac that is plugged in. This will help ensure that your body does not provide a path to ground in the event that you accidentally make contact with the line voltage.
- Don't wear jewelry, watches, necklaces, or other metallic articles that could present a risk if they accidentally make contact with the power supply circuitry.

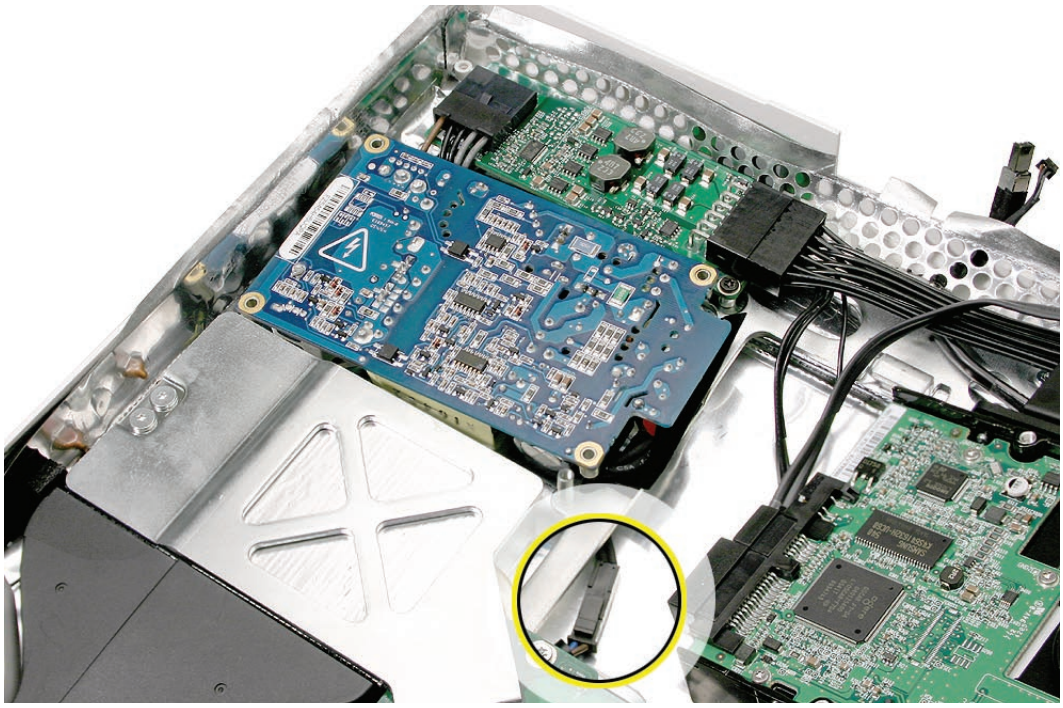


Removing the Power Supply

1. Using a T10 torx screwdriver, remove the three self-tapping screws from both top corners and the lower left corner of the DC-DC board. Then remove the machine screw from the lower right corner of the board.
   Replacement Note: When installing the mounting screws in the power supply, install the machine screw first in the lower right corner of the power supply. Then install the three self-tapping screws.



2. Disconnect the power supply cable in the top left corner of the photo).
3. Pull out the power supply-to-AC line filter cable from beneath the metal chassis. Disconnect the connectors.



Replace the Power Supply

1. Position the power supply loosely in its mounting location.
2. Route the power supply end of the power supply-to-AC line filter cable beneath the chassis. Connect the two connectors. Tuck the cable beneath the chassis and away from the hard drive bay.
3. Connect the DC power cable.
4. Install the machine screw in the lower right corner of the power supply. Then install the three self-tapping screws.
5. Replace the hard drive.
6. Replace the display panel.
7. Replace the lower EMI shield.
8. Replace the front bezel.
9. Replace the access door.

Logic Board

Tools

Removing the logic board requires using the following tools:

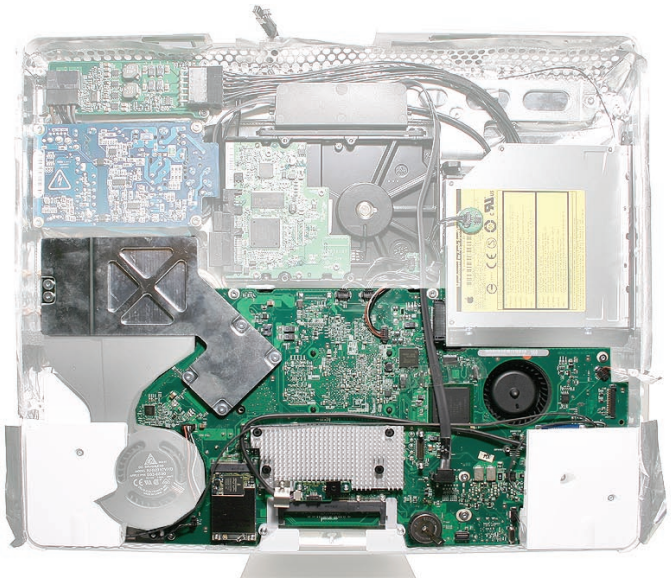
- Torx T10 screwdriver (magnetized)
- Torx T6 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

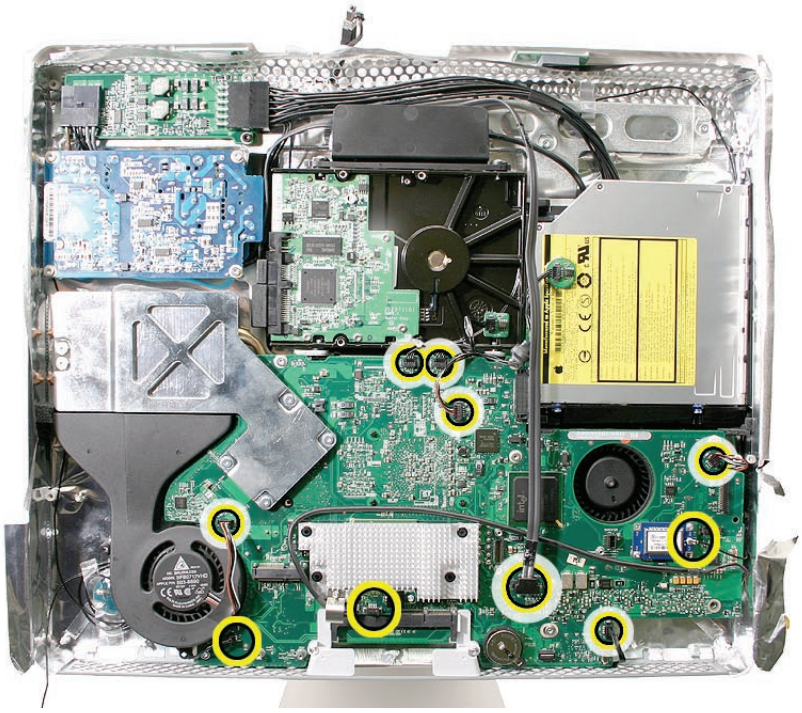
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable

Part Location

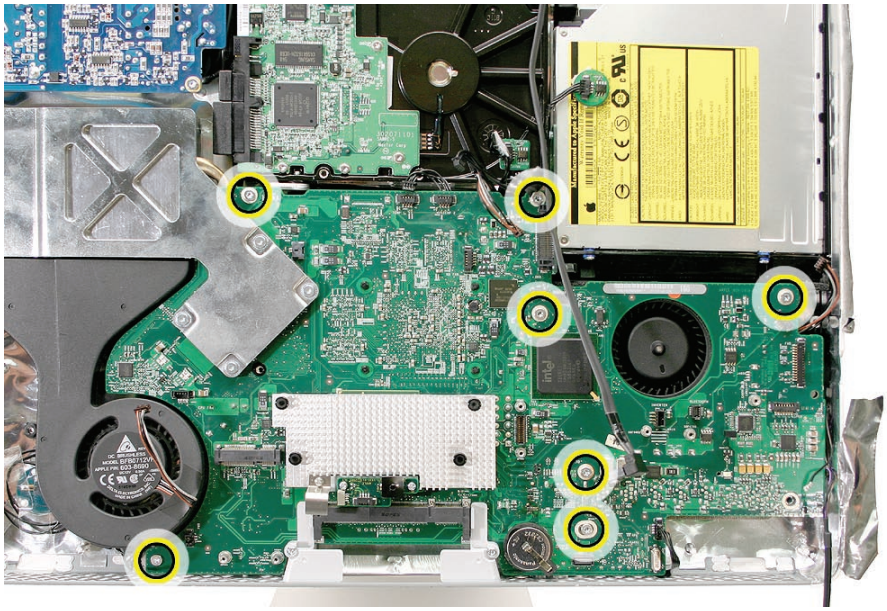


Removing the Logic Board

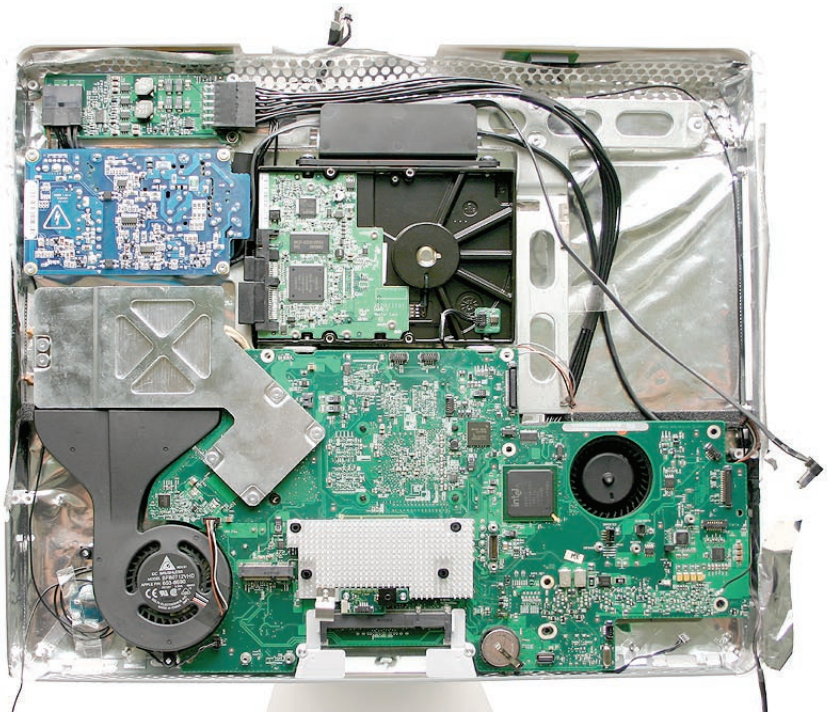
1. Disconnect the cables (circled) and the optical flex cable from the logic board.



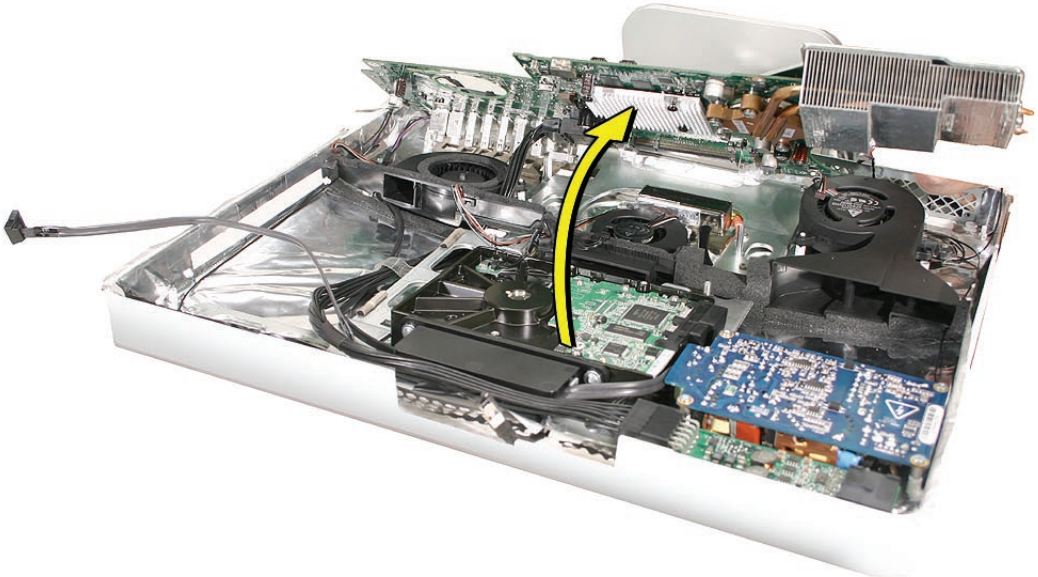
2. Using a T10 torx screwdriver, remove the screws from the logic board. Note the locations of the self-tapping and machine screws as you remove the screws.



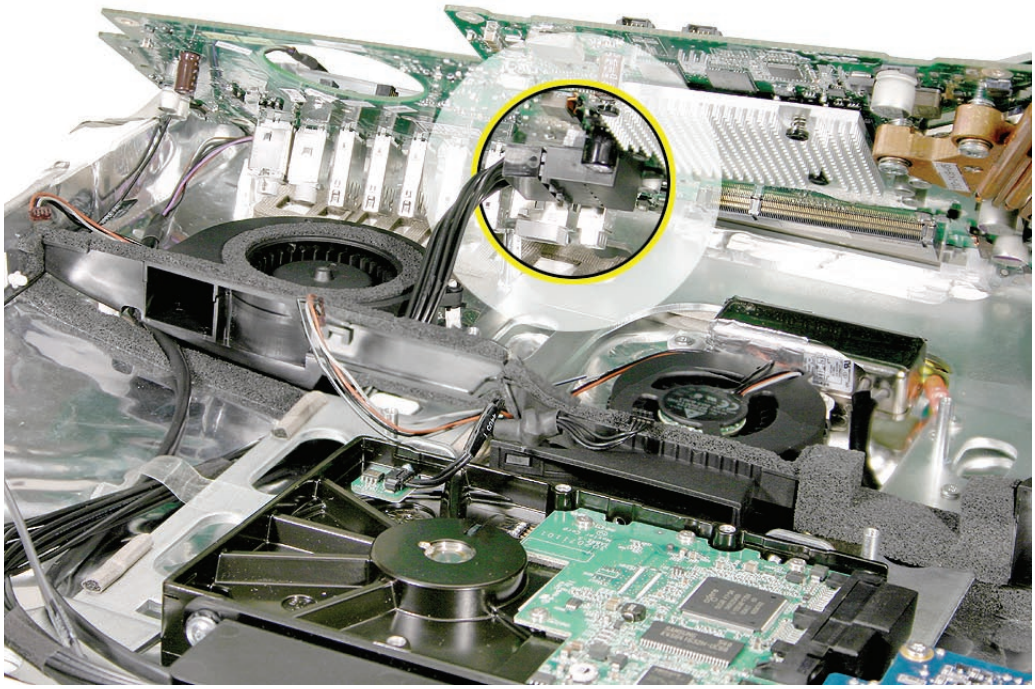
3. Remove the optical drive.



4. With the stand facing you, lift the board and locate the black power connector on the underside of the board (on the right side) Refer to the next photo for a close up.

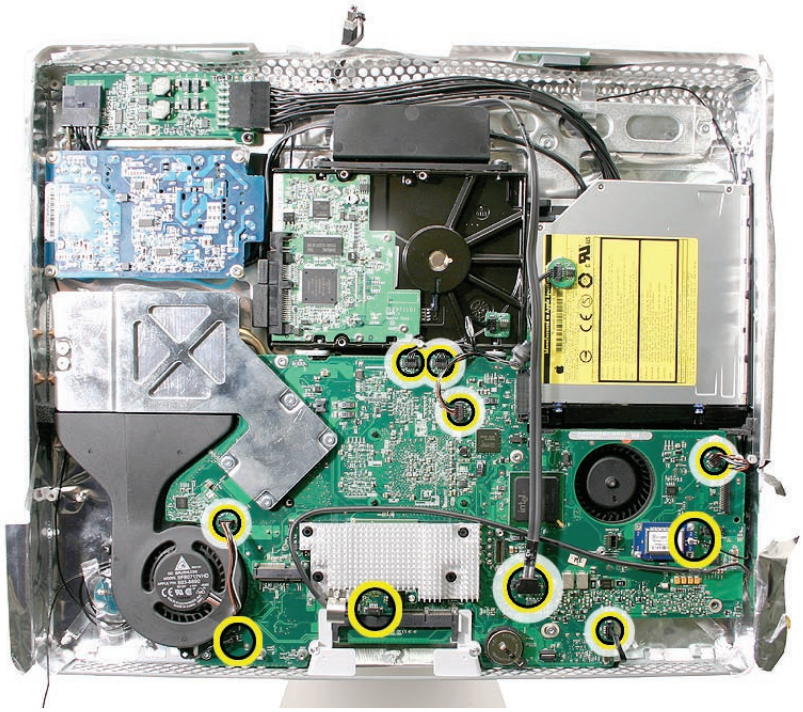


5. Disconnect the power supply cable and carefully lift the logic board out of the chassis.



Replacing the Logic Board

1. Connect the power supply cable to the connector on the bottom of the logic board.
2. Pull all cables up and away from the logic board bay and gently place down the logic board so that all screw holes are aligned with screw mounts in the chassis.
   Replacement Note: The logic board should rest on the screw mounts without any binding or bowing—if it doesn't, adjust any cables that are interfering with the logic board.
3. Secure the logic board by installing four machine screws, and then installing three self-tapping screws.
4. Connect all the cables.



5. Connect the optical drive flex cable and secure it with the flex cable mounting clip and screw.
6. Replace the speakers.
7. Replace the display panel.
8. Replace the IR Board and connect the cable.
9. Replace the AirPort Extreme card and connect the antenna.
10. Replace the Bluetooth card and connect the antenna.
11. Replace the lower EMI shield.
12. Replace the front bezel.

13. Replace the memory.
14. Replace the memory access door.

CPU Fan

Tools

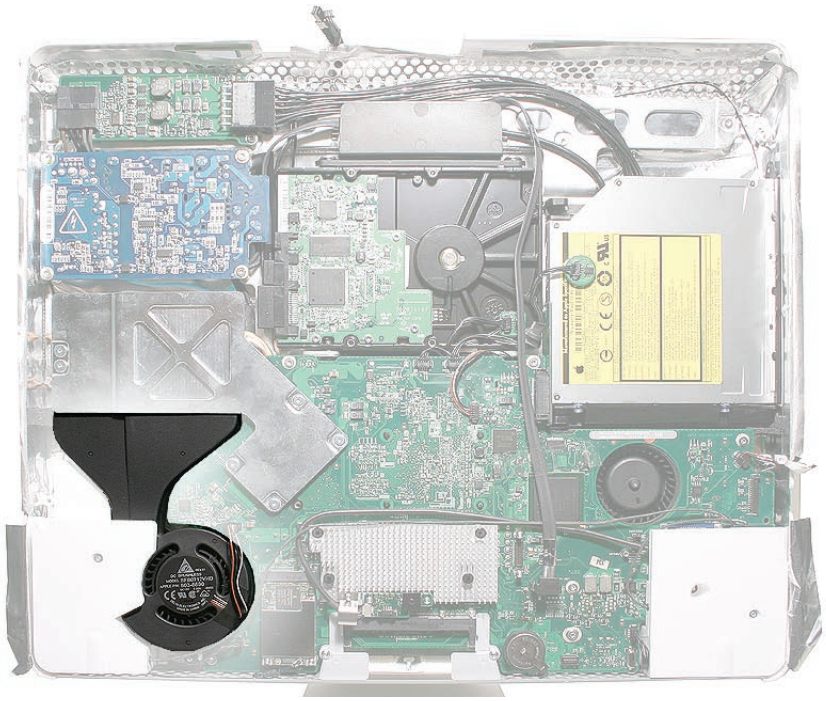
No tools are required to remove the CPU fan.

Preliminary Steps

Before you begin, follow steps for removing the following:

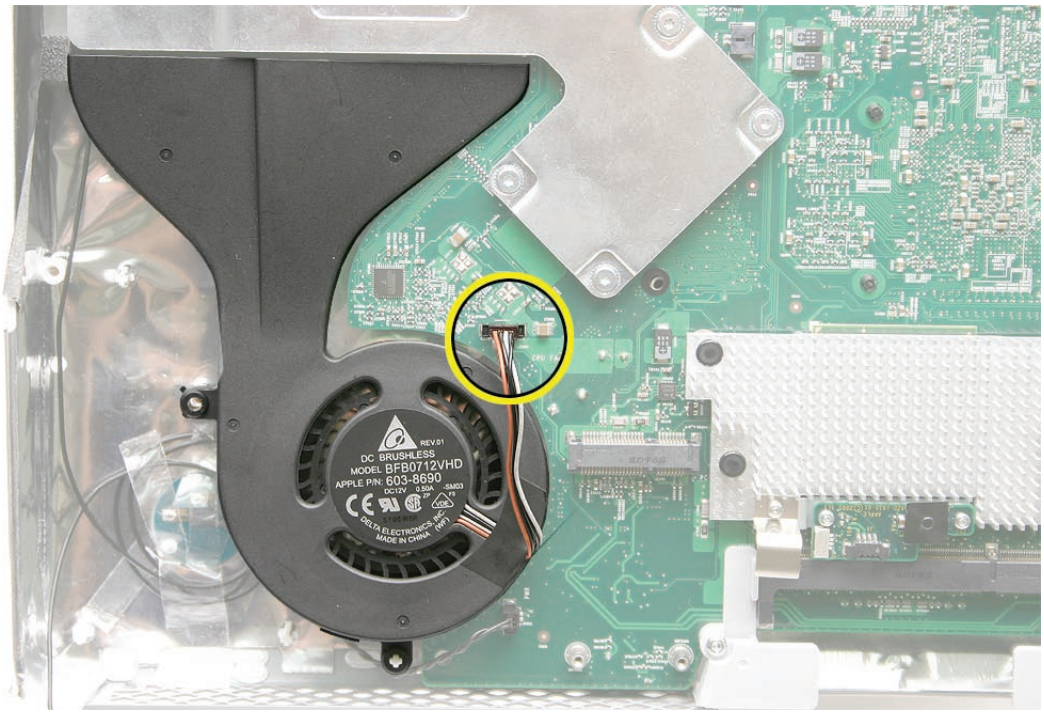
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- Speakers
- Memory

Part Location



Removing the CPU Fan

1. Disconnect the CPU fan cable from the logic board.



2. Remove the **logic board**.
3. Lift the CPU fan straight up to remove it from two mounting posts.

Replacing the CPU Fan

1. Align the CPU fan with the two mounting posts in the rear housing, and push it straight down onto the posts.
2. Replace the logic board.
3. Connect the CPU fan cable to the logic board connector.
4. Replace the speakers.
5. Replace the display panel.
6. Replace the lower EMI shield.
7. Replace the front bezel.
8. Replace the memory.
9. Replace the access door.

Optical Drive Fan

Tools

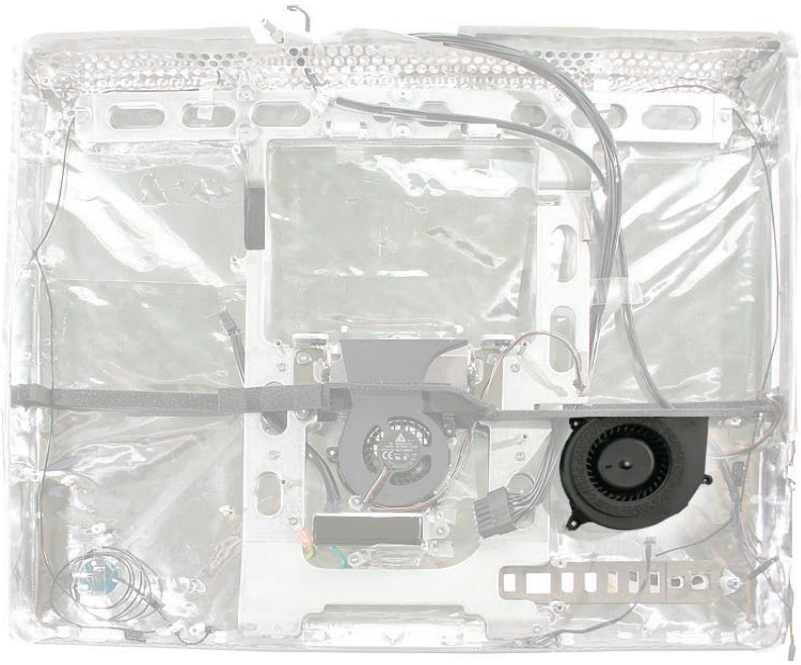
No tools are required to remove the optical drive fan.

Preliminary Steps

Before you begin, follow steps for removing the following:

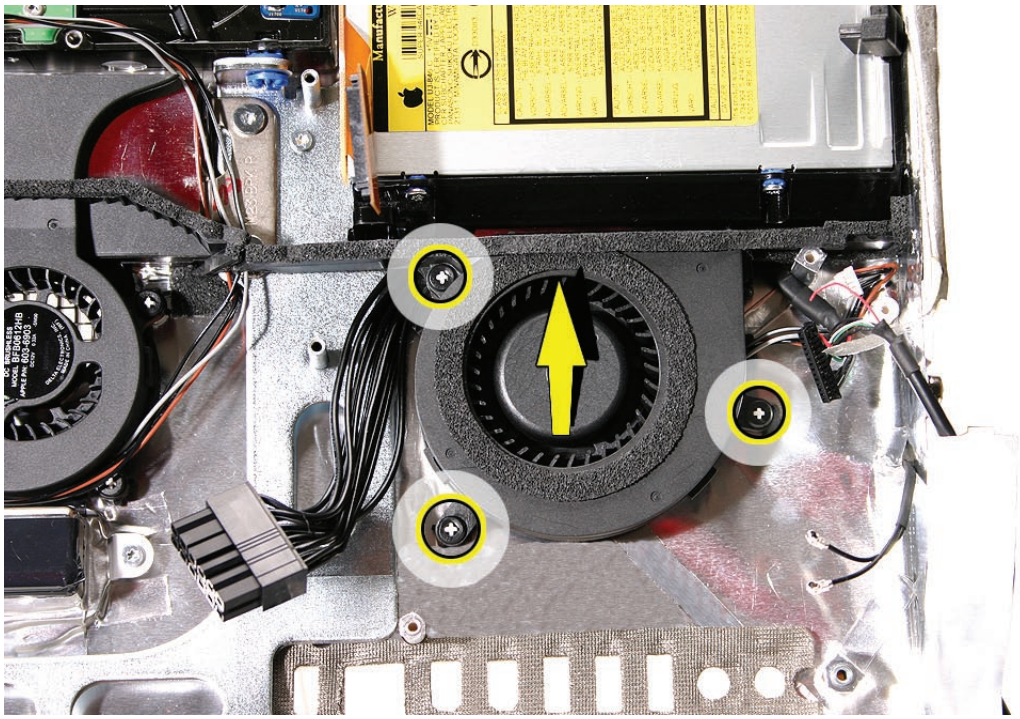
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- Logic Board and Memory

Part Location



Remove the Optical Drive Fan

1. Lift the optical drive fan straight up and off three mounting posts.



Replace the Optical Drive Fan

1. Make sure the hard drive power cable and camera board cable are routed beneath the optical drive fan as shown above. Align and install the optical drive fan on three mounting posts. Push it down snug onto the posts.
2. Replace the logic board.
3. Replace the speakers.
4. Replace the display panel.
5. Replace the IR Board.
6. Replace the AirPort Extreme card.
7. Replace the Bluetooth card.
8. Replace the lower EMI shield.
9. Replace the front bezel.
10. Replace the memory.
11. Replace the memory access door.

Hard Drive Fan

Tools

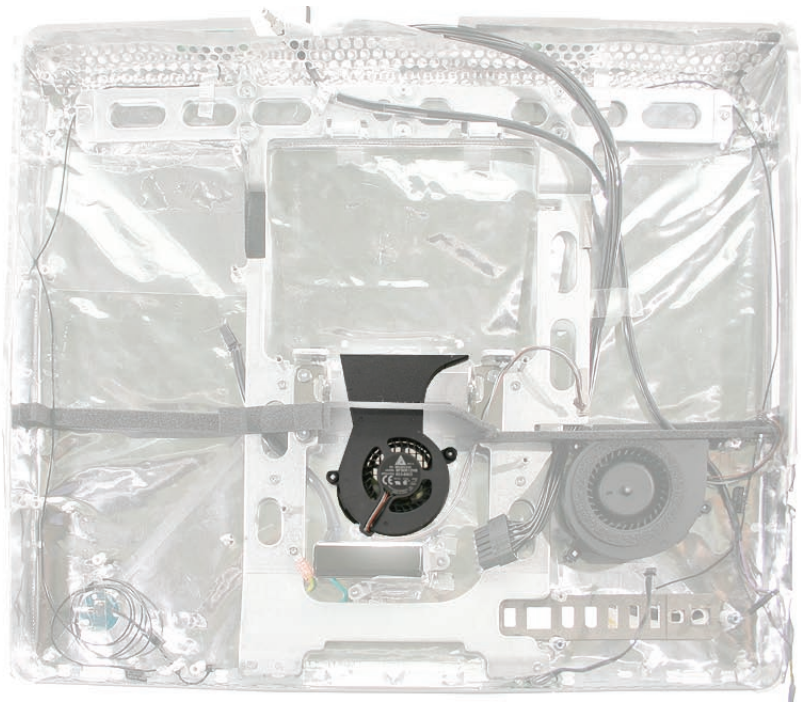
No tools are required to remove the hard drive fan.

Preliminary Steps

Before you begin, follow steps for removing the following:

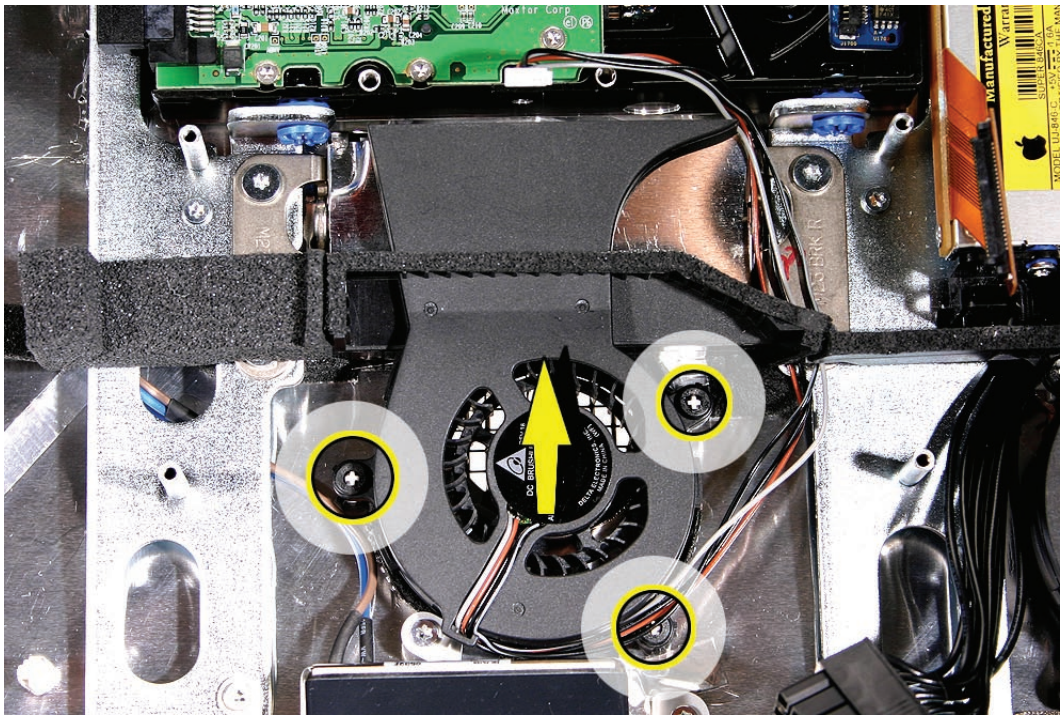
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- Logic Board and Memory

Part Location



Remove the Hard Drive Fan

1. Lift the hard drive fan straight up and off three mounting posts.



Replacing the Hard Drive Fan

1. Align and install the hard drive fan on mounting posts. Push it down snug onto the posts.
2. Replace the logic board.
3. Replace the speakers.
4. Replace the IR Board.
5. Replace the AirPort Extreme card
6. Replace the Bluetooth card.
7. Replace the display panel.
8. Replace the lower EMI shield.
9. Replace the front bezel.
10. Replace the memory.
11. Replace the memory access door.

AC Line Filter

Tools

Removing the AC power inlet requires using the following tools:

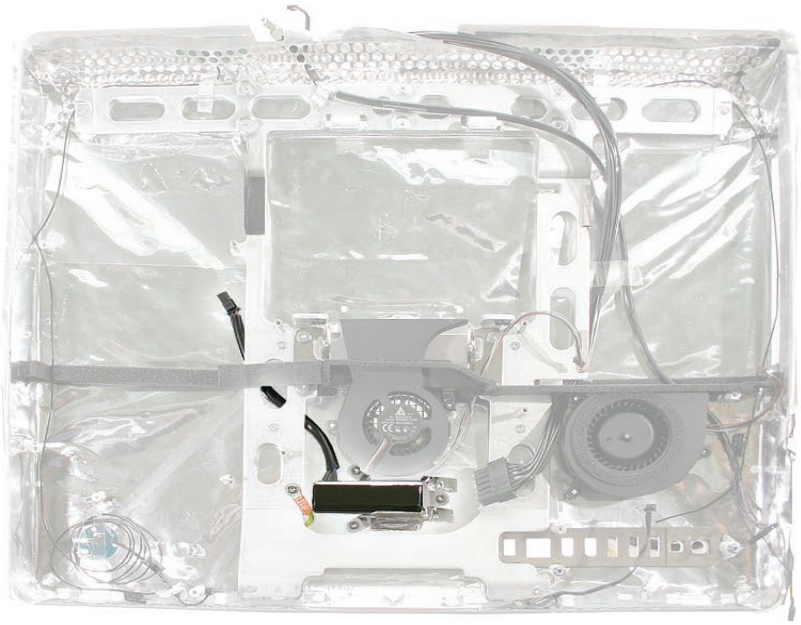
- Torx T10 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

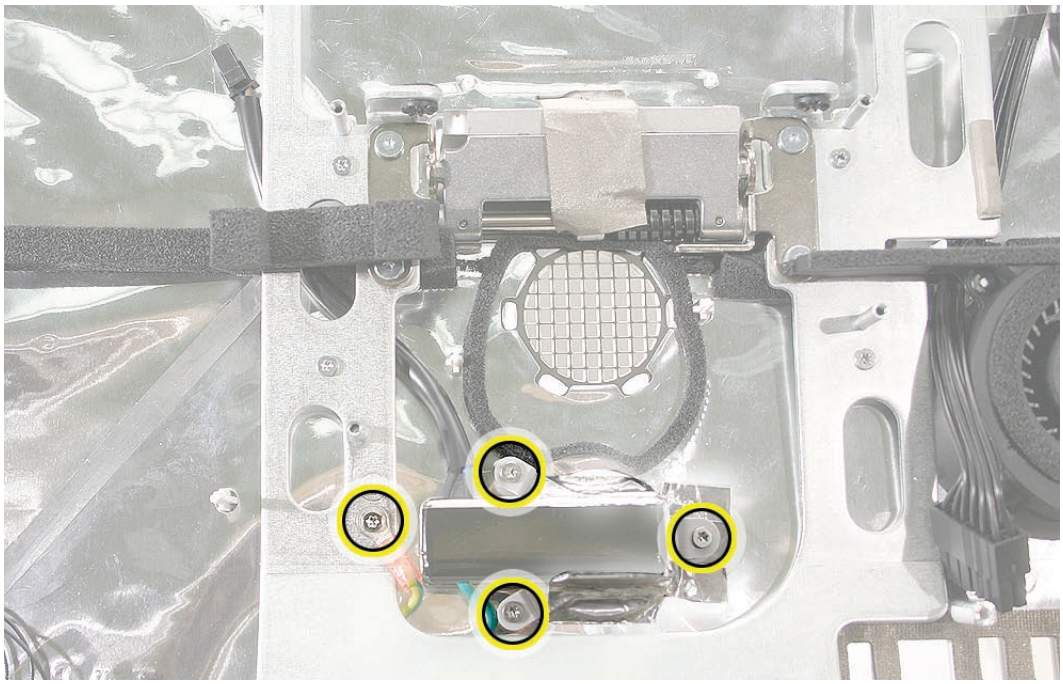
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- Logic Board and Memory
- Hard Drive Fan

Part Location



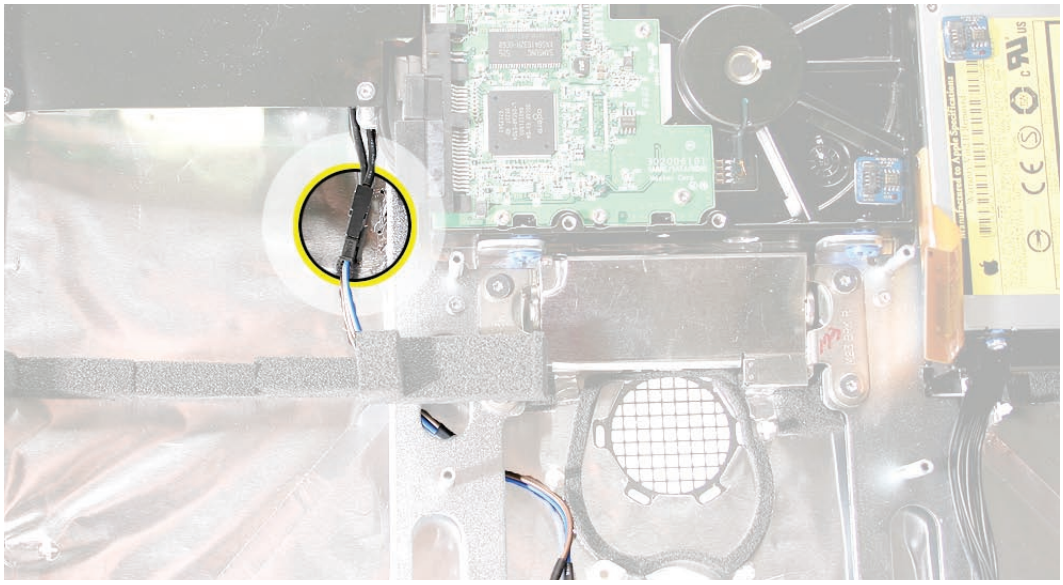
Removing the AC Line Filter

1. Using a torx T10 screwdriver, remove the three self-tapping screws from the power inlet.
2. Using a tox T10 screwdriver, remove the machine screw from the power inlet ground cable.



3. Peel the EMI tape off the AC filter.

4. .Disconnect the power inlet-to-power supply cables and unlace the power inlet cable from beneath the chassis.



Replacing the AC Line Filter

1. Install the AC power inlet on the rear housing screw mounts with three self tapping screws.
2. Install the power inlet ground cable to the chassis with a machine screw.
3. Route the power inlet cable beneath the chassis as shown in the photo above, and connect it to the power supply.
4. Using EMI tape, securely tape the top and bottom edges of the AC power inlet to the rear housing.
5. Replace the hard drive fan.
6. Replace the logic board.
7. Replace the IR Board.
8. Replace the speakers.
9. Replace the AirPort Extreme card.
10. Replace the Bluetooth card.
11. Replace the display panel.
12. Replace the lower EMI shield.
13. Replace the front bezel.
14. Replace the memory.
15. Replace the memory access door.

Ambient Light Sensor Board

Tools

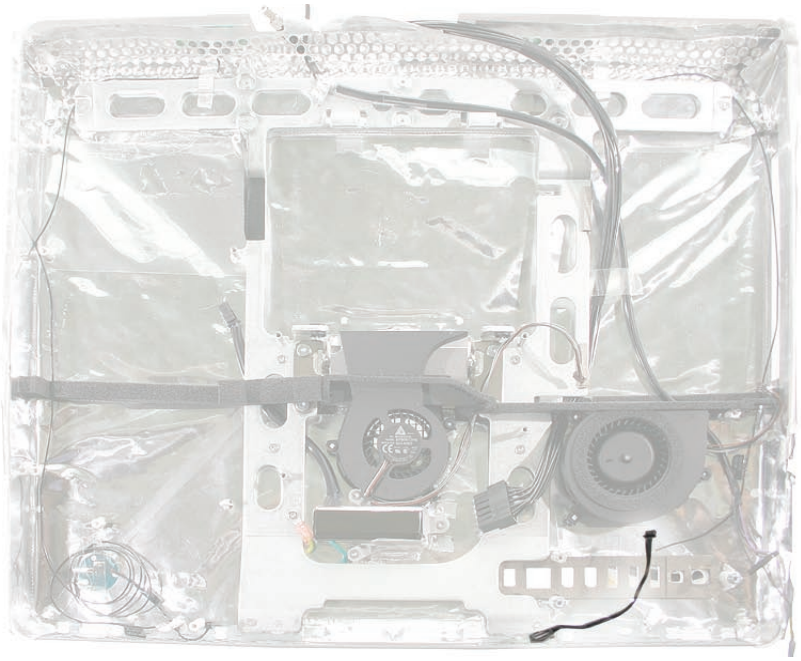
No tools are required to remove the ambient light sensor board.

Preliminary Steps

Before you begin, follow steps for removing the following:

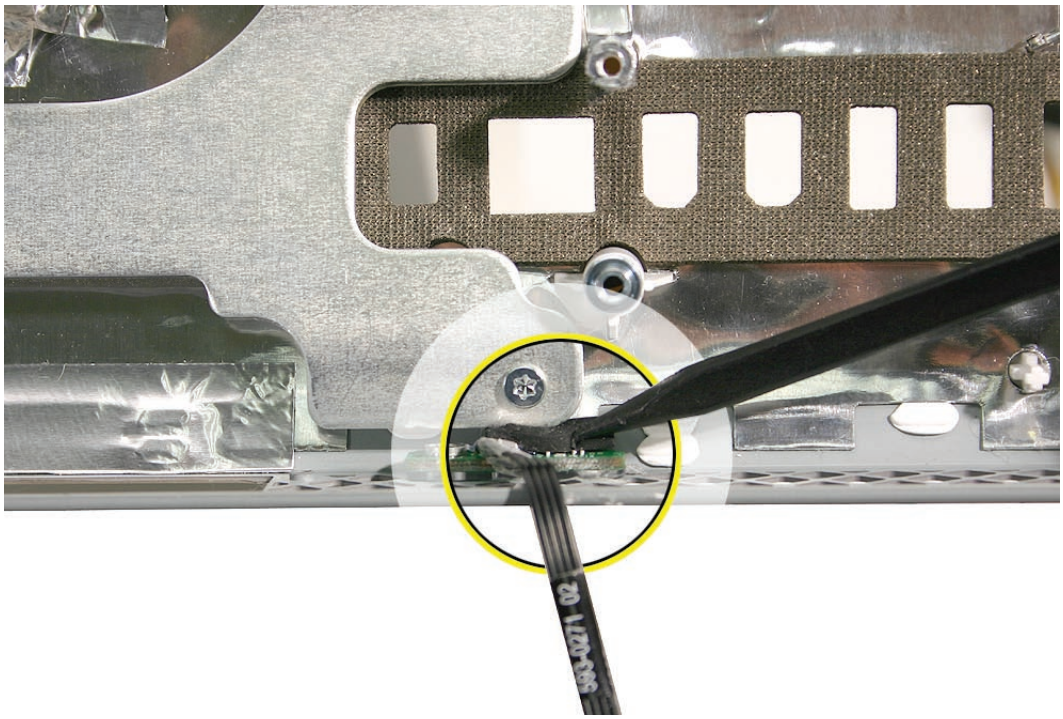
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- Logic Board

Part Location

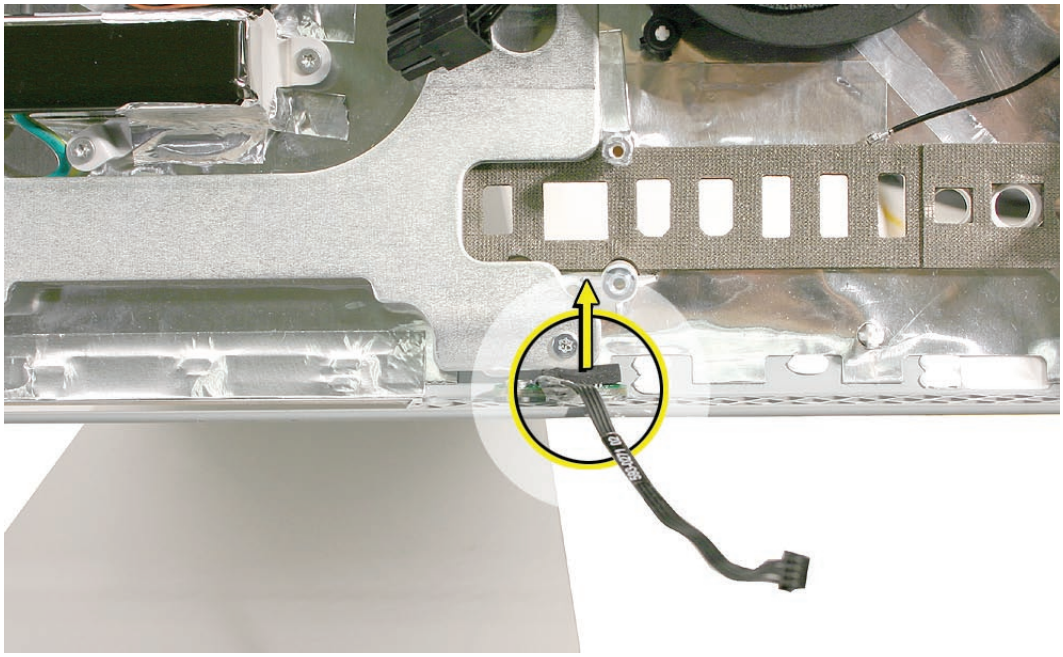


Removing the Ambient Light Sensor Board

1. Remove the rubber bumper from between the chassis and the board.



2. With a black stick, pry the ambient light sensor board from the frame.



Replacing the Ambient Light Sensor Board

1. Press the sticky side of the ambient light sensor board to the bottom inside edge of the rear housing.
2. Install the rubber bumper between the back of the ALS board and the chassis.
3. Replace the logic board.
4. Replace the AirPort and Bluetooth boards.
5. Replace the speakers.
6. Replace the display panel.
7. Replace the IR Board.
8. Replace the lower EMI shield.
9. Replace the front bezel.
10. Replace the memory.
11. Replace the memory access door.

Clutch

Tools

Removing the clutch requires using the following tools:

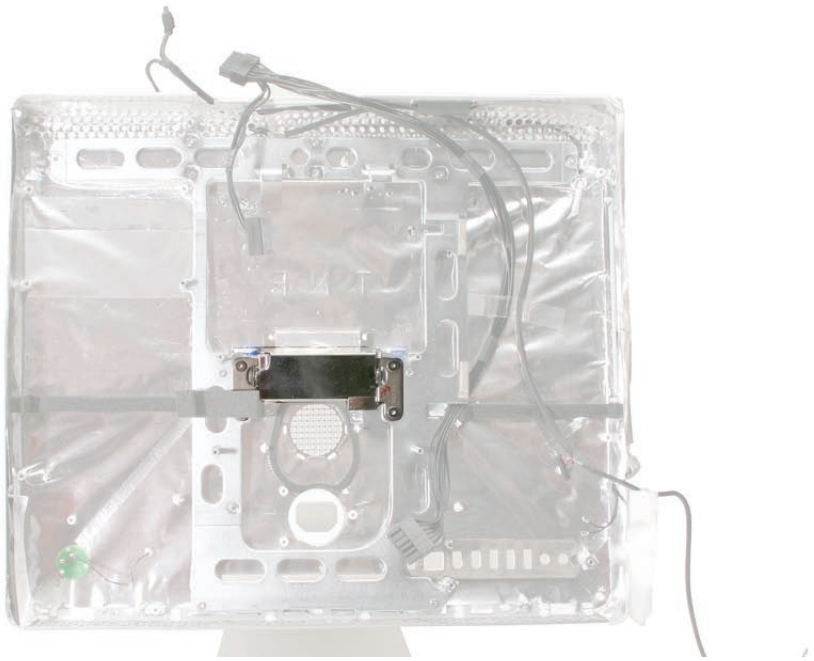
- Torx T10 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

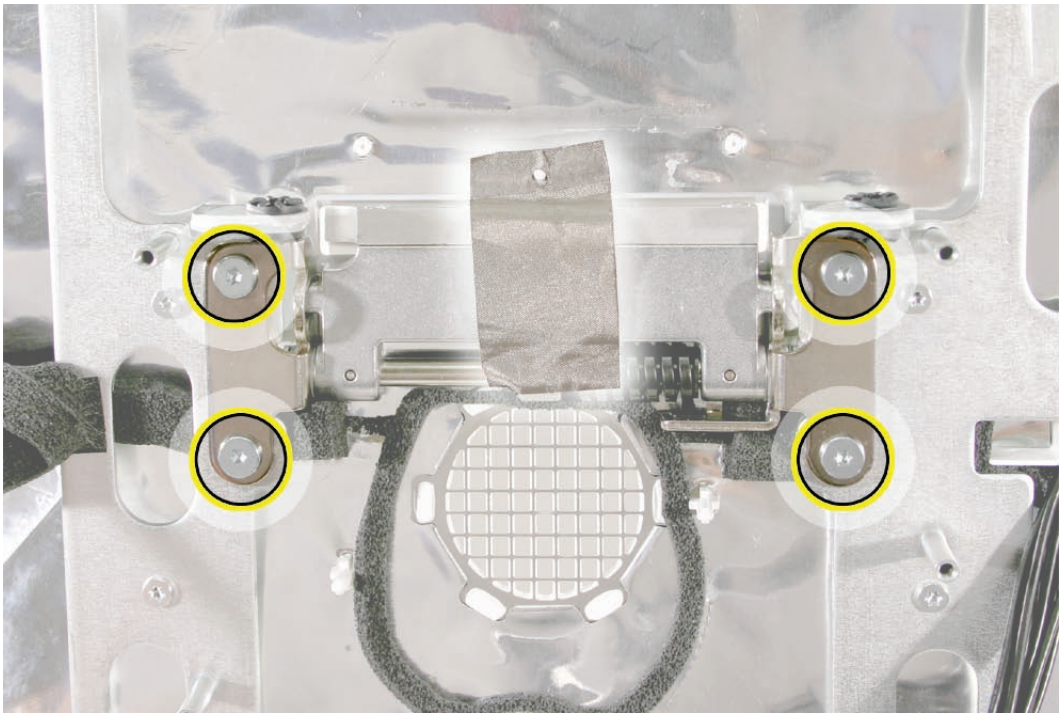
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- Logic Board
- Hard drive fan
- Hard drive

Part Location

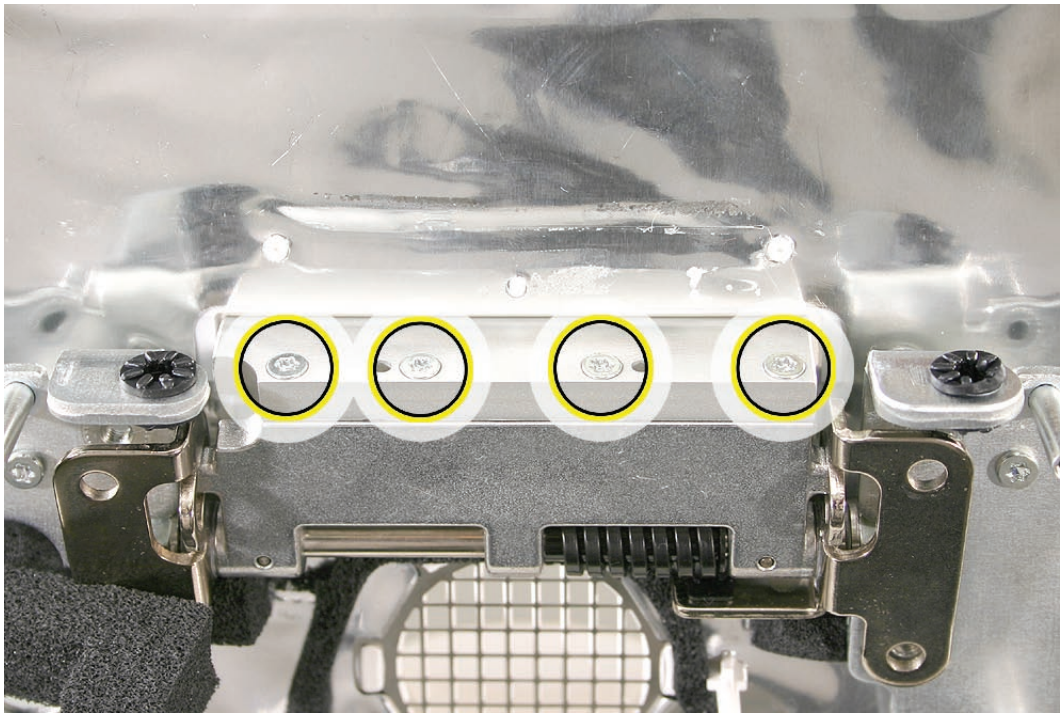


Removing the Clutch

1. Carefully peel the EMI tape (located in the middle of this photo) up and off the metal EMI cover. Next, remove the EMI metal cover.
2. Using a T10 torx screwdriver, remove the four clutch mounting screws.



3. Stand up the unit and remove the four clutch-to-stand mounting screws.
4. Using a T10 torx screwdriver, remove the four clutch-to-stand screws. Remove the clutch and cover from the stand.



Replace the Clutch

1. Make sure the stand is erect and the end of the stand is inserted through the mounting hole in the rear housing.
2. Position the clutch on the stand as shown, with the springs at bottom right. Install the four long, clutch-to-stand mounting screws..
3. Adjust the clutch so that its chassis mounting holes align, and install the four machine screws that secure the clutch to the chassis.
4. Replace the hard drive.
5. Replace the hard drive fan.
6. Replace the optical drive fan.
7. Replace the logic board.
8. Replace the CPU fan.
9. Replace the speakers.
10. Replace the display panel.
11. Replace the IR Board.
12. Replace the lower EMI shield.
13. Replace the front bezel.
14. Replace the memory access door.

AirPort Antenna

Tools

Removing the wireless antenna requires using the following tools:

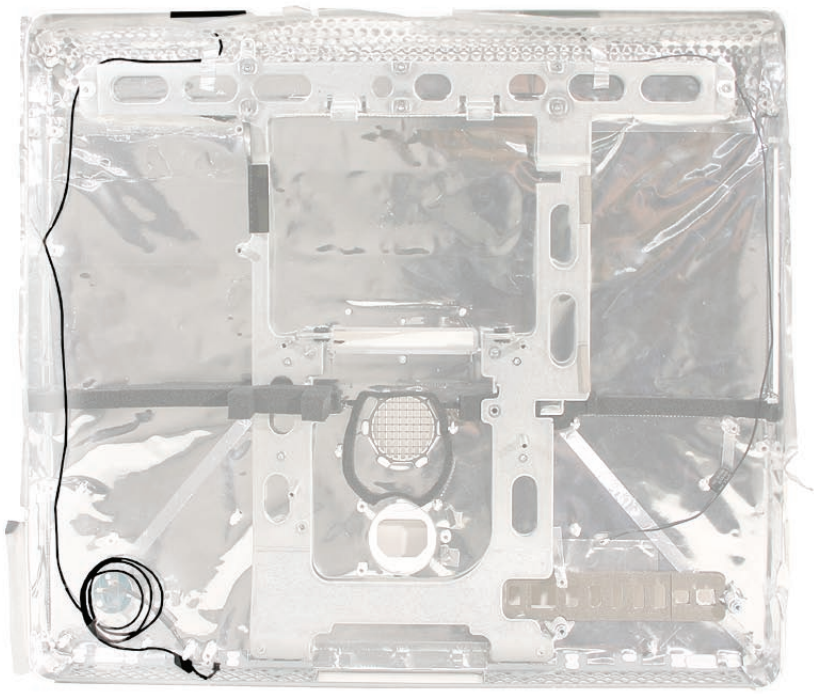
- Flat-blade screwdriver
- Black stick (or other nonconductive nylon or plastic flat-blade tool)

Preliminary Steps

Before you begin, follow steps for removing the following:

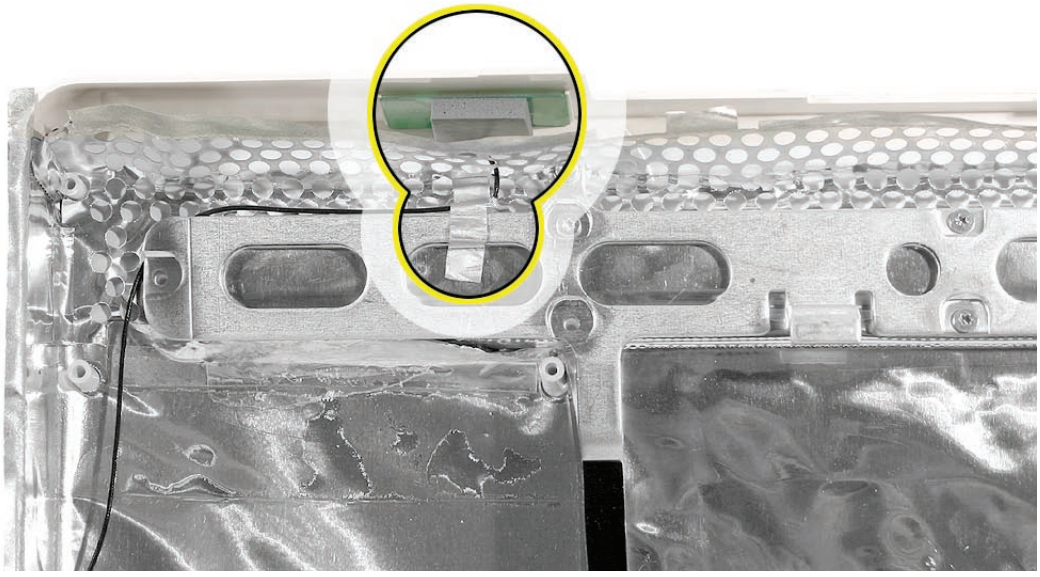
- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- IR Board
- AirPort Extreme Card
- Speakers
- Bluetooth Card and Cable
- DC-DC power supply
- Logic board
- CPU fan

Part Location

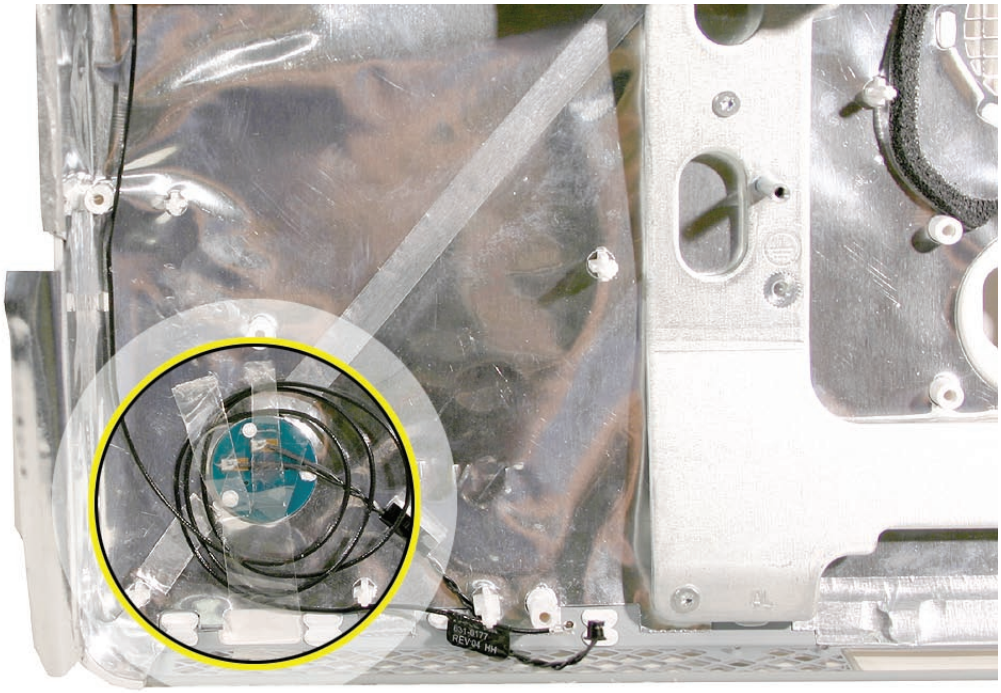


Removing the AirPort Antenna

1. Carefully peel back the EMI tape (off the chassis) and the EMI backing from the top left inside corner of the rear housing as shown below. Peel back just enough EMI backing to access the antenna board. Using a flat-blade screwdriver, pry the antenna off the rear housing.



2. Remove two pieces of tape that secure the antenna cable to the rear housing (near the power on LED, in the bottom left corner). Pull the antenna cable through the access hole in the EMI shield at the top, near the antenna board.



Replacing the AirPort Extreme Antenna

1. Locate the antenna mounting channel inside the left corner of the rear housing, and position the antenna in the channel. Compress the sticky side of the antenna to the housing until securely fastened.
2. Route the antenna cable through the EMI shield and on top of the EMI.
3. Secure the extra length of antenna cable to the housing with two pieces of tape.
4. Replace the CPU fan.
5. Replace the logic board.
6. Replace the DC-DC board.
7. Replace the DC power supply.
8. Replace the speakers.
9. Replace the IR Board.
10. Replace the AirPort Extreme board.
11. Replace the Bluetooth board.
12. Replace the display panel.
13. Replace the lower EMI shield.
14. Replace the front bezel.
15. Replace the memory access door.

Bluetooth Antenna

Tools

Removing the wireless antenna requires using the following tools:

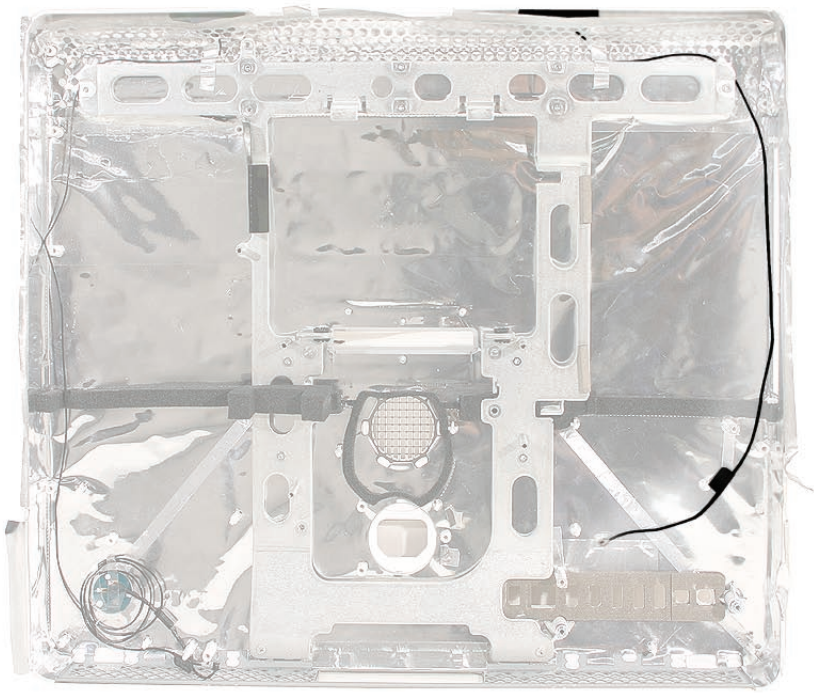
- Flat-blade screwdriver
- Black stick (or other nonconductive nylon or plastic flat-blade tool)

Preliminary Steps

Before you begin, follow steps for removing the following:

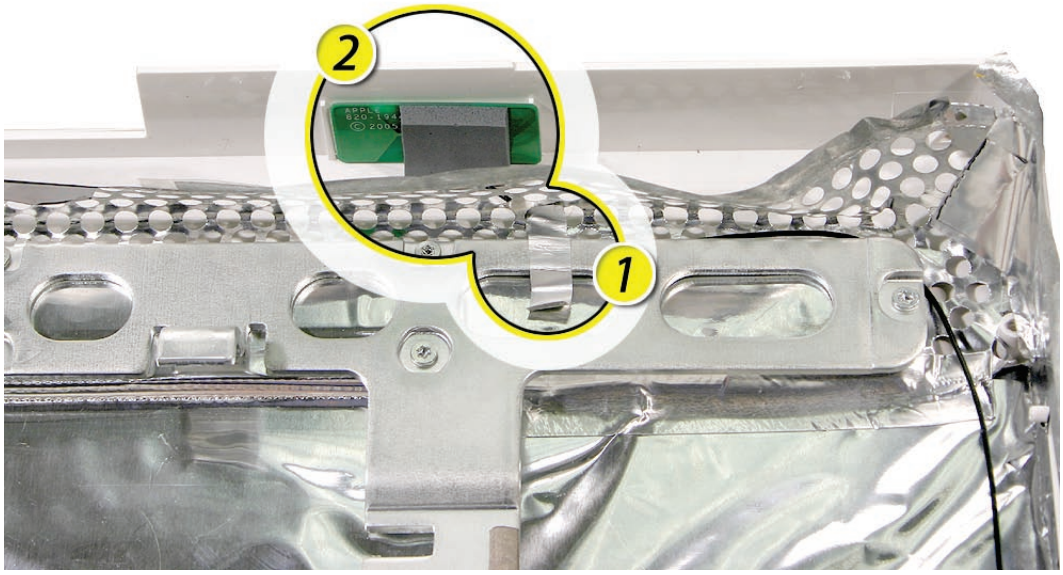
- Access door
- Front bezel
- Lower EMI shield
- Disconnect the IR Board
- Disconnect the AirPort Extreme Card
- Disconnect the Bluetooth card
- LCD Display
- Speakers
- Optical Drive
- Logic board
- CPU fan

Part Location



Removing the Bluetooth Antenna

1. Carefully peel back the EMI shield from the top right inside corner of the rear housing as shown below. Remove the piece of EMI tape securing the antenna to the chassis (#1). Peel back just enough EMI backing to access the antenna cable (#2).



2. Using a flat-blade screwdriver, pry the antenna off the rear housing.
3. Pull the antenna cable through the opening in the EMI shielding at the top

Replace the Wireless Antenna

1. Locate the antenna mounting channel inside the top right corner of the rear housing, and position the antenna in the channel. Compress the sticky side of the antenna to the housing until securely fastened.
2. Route the antenna cable and insert the connector end of the cable through the access hole in the EMI skirt.
3. Secure the antenna cable at the top with EMI tape.
4. Carefully replace the EMI shield at the top. Using a black stick, work out all wrinkles and bubbles until the EMI tape is smooth and tight.
5. Replace the optical drive.
6. Replace the CPU fan
7. Replace the logic board.
8. Connect the Bluetooth antenna.
9. Connect the IR cable.
10. Connect the AirPort antenna.
11. Replace the speakers.
12. Replace the display panel.
13. Replace the lower EMI shield.
14. Replace the front bezel.
15. Replace the memory access door.

DC Power Cable

Tools

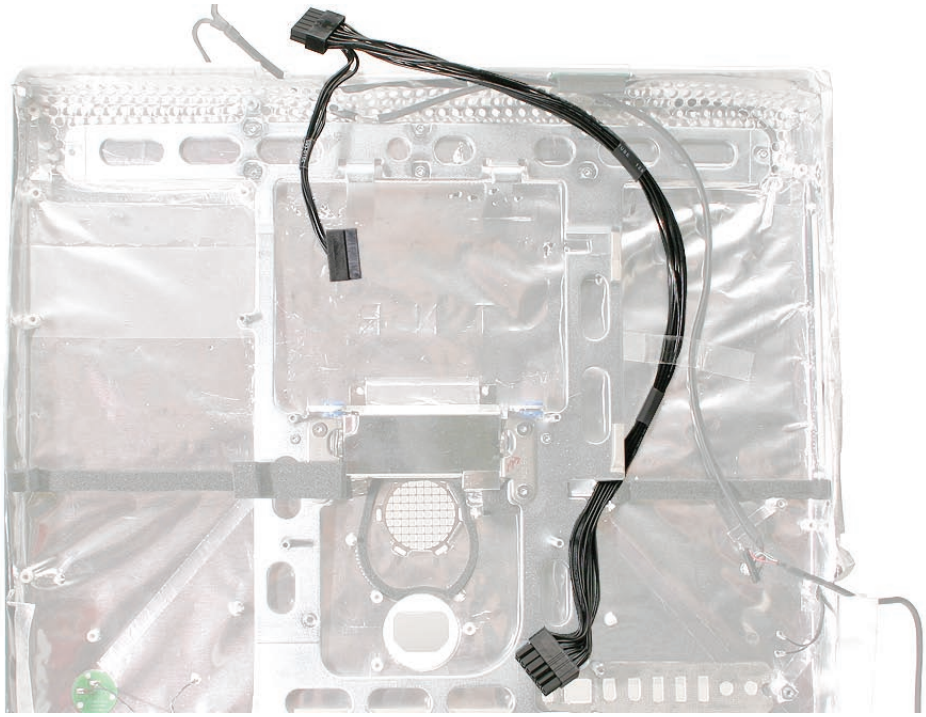
No tools are required to remove the DC power cable.

Preliminary Steps

Before you begin, follow steps for removing the following:

- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- Speakers
- Optical Drive
- Hard Drive
- Optical Drive Fan
- Logic board

Part Location

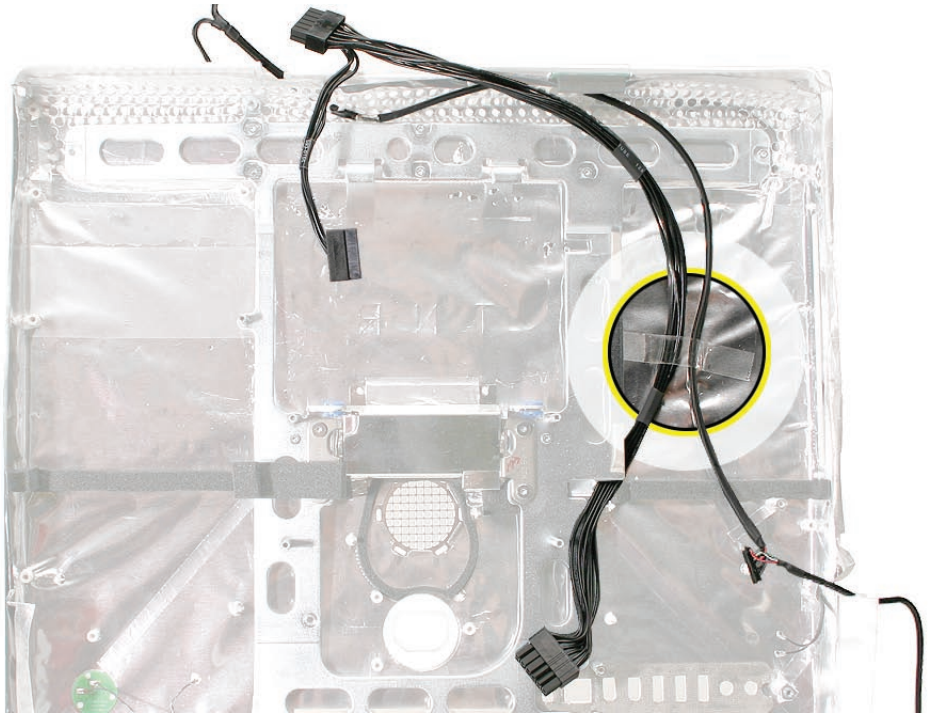


Removing the DC Power Cable

1. Remove tape that secures the DC power cable to the rear housing, and remove the DC power cable.

Replace the DC Power Cable

1. Route the DC power cable as shown above. Tape the DC power cable and the camera cable to the rear housing where shown below.



2. Replace the hard drive.
3. Replace the optical drive.
4. Replace the optical drive fan.
5. Replace the logic board.
6. Replace the speakers.
7. Replace the display panel.
8. Replace the IR Board.
9. Replace the lower EMI shield.
10. Replace the front bezel.
11. Replace the memory access door.

Camera Cable

Tools

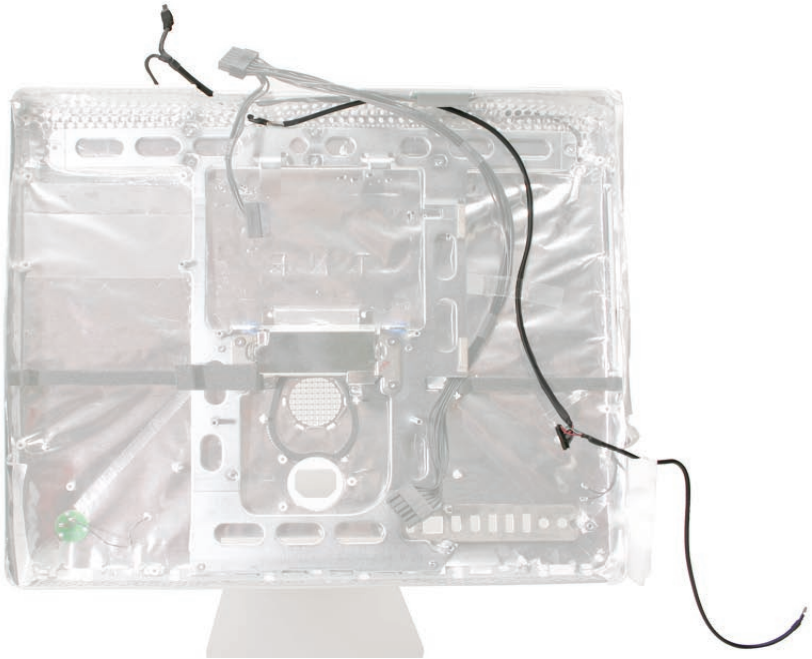
No tools are required to remove the camera cable.

Preliminary Steps

Before you begin, follow steps for removing the following:

- Access door
- Front bezel
- Lower EMI shield
- LCD Display
- Speakers
- Optical Drive
- Hard Drive
- Optical Drive Fan
- Logic board

Part Location

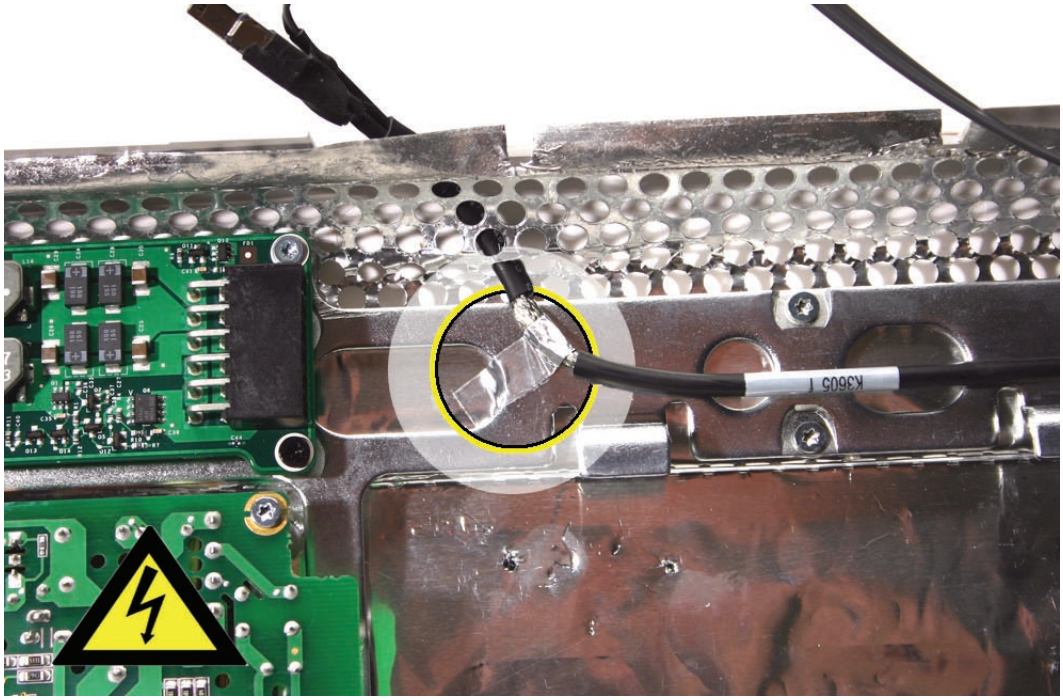


Removing the Camera Cable

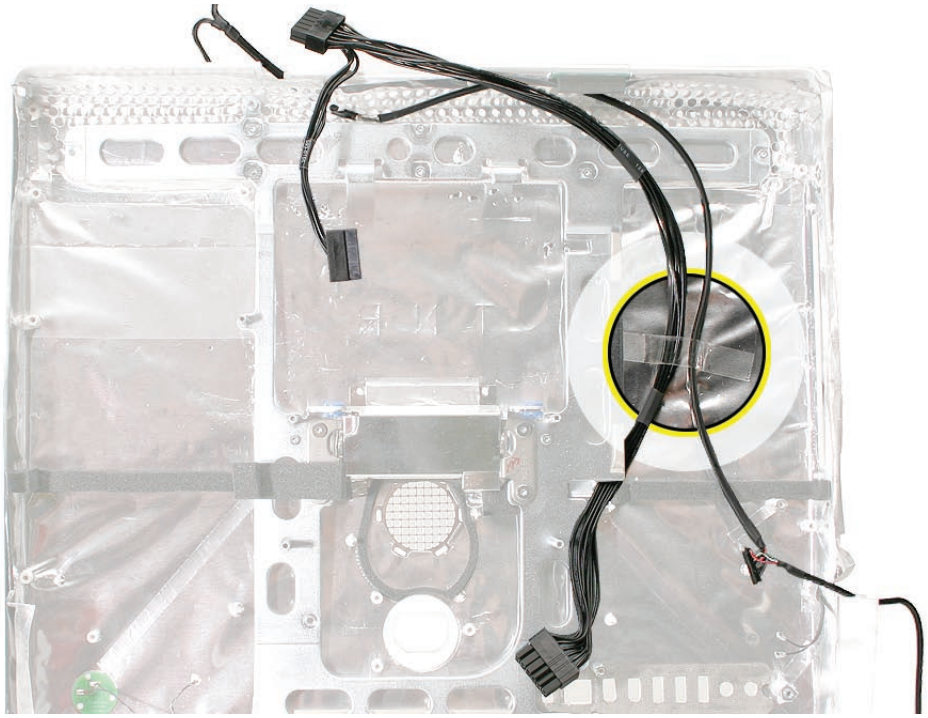
1. Remove tape that secures the camera cable to the rear housing. Remove the two-headed end of the cable from the access hole in the upper EMI shield, and remove the camera cable.

Replacing the Camera Cable

1. Insert the two-headed end of the camera cable through the access hole in the upper EMI shield.
2. Replace the EMI grounding tape as shown below. The metallic tape should secure the cable to the metal chassis.



3. Route the camera cable as shown, and tape the camera cable and DC power cable to the rear housing as shown below.



4. Replace the hard drive.
5. Replace the optical drive.
6. Replace the optical drive fan.
7. Replace the logic board.
8. Replace the speakers.
9. Replace the display panel.
10. Replace the IR Board.
11. Replace the lower EMI shield.
12. Replace the front bezel.
13. Replace the memory access door.

Chassis

Tools

Removing the chassis requires using the following tools:

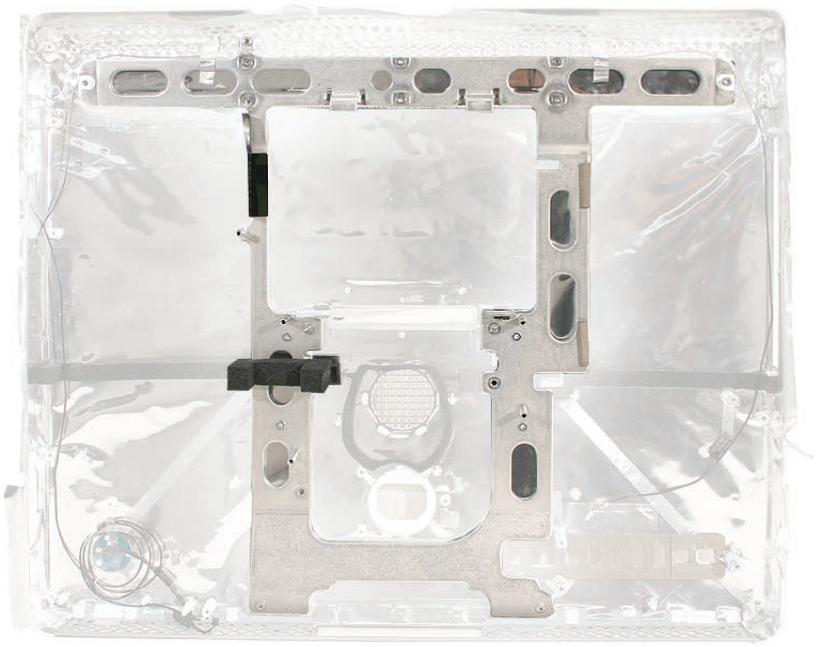
- Torx T10 screwdriver (magnetized)

Preliminary Steps

Before you begin, follow steps for removing the following:

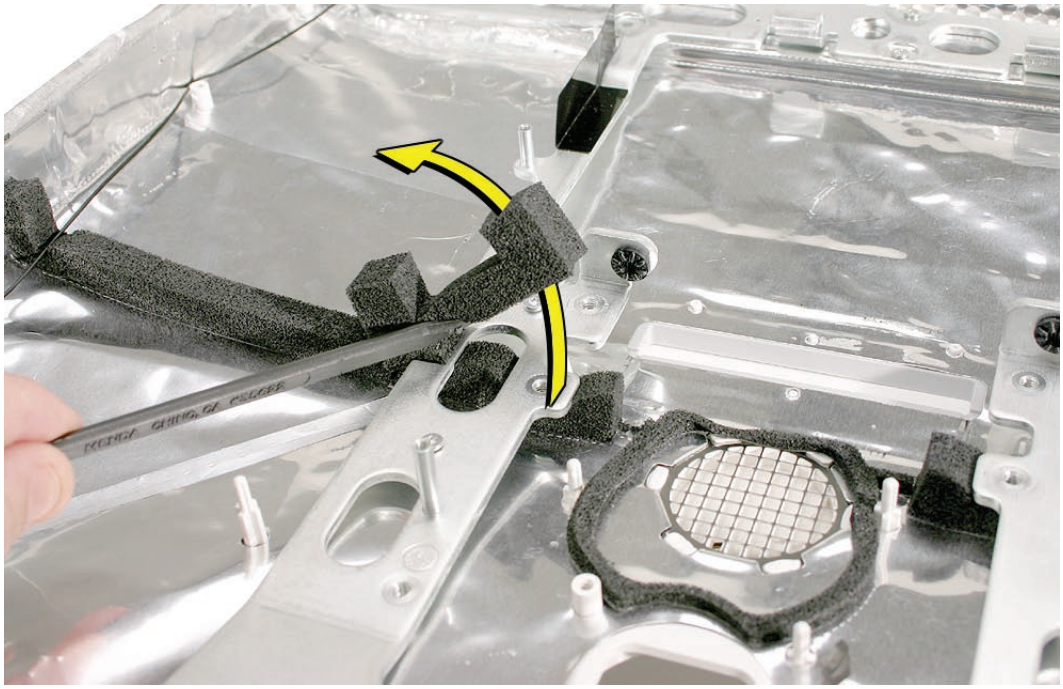
- Access door
- Front bezel
- Lower EMI shield
- LCD display
- Speakers
- Optical drive
- Hard drive
- Optical drive fan
- Logic board
- Hard drive fan
- CPU fan
- DC-DC board
- DC-DC power cable
- Power supply
- AC line filter
- Clutch

Part Location

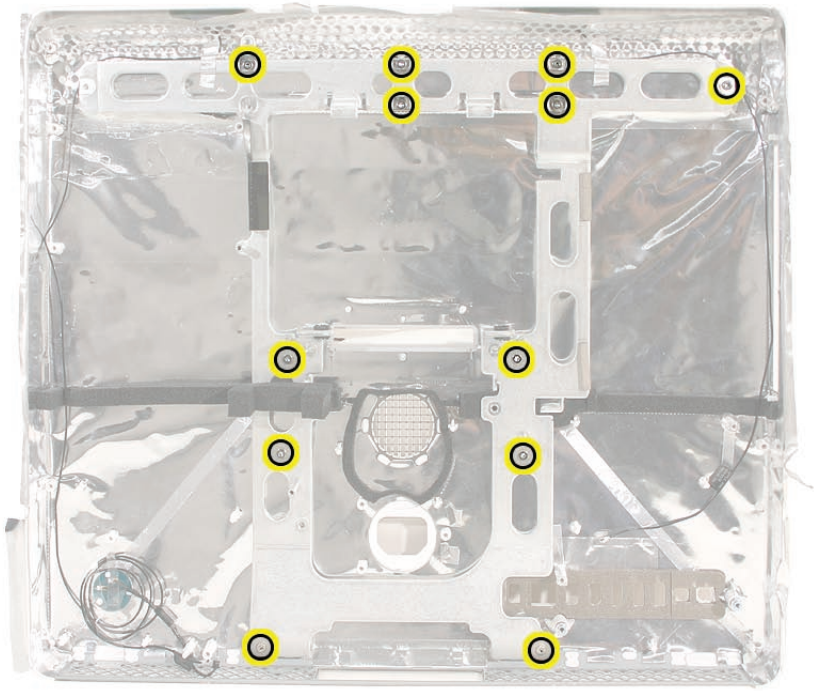


Removing the Chassis

1. Remove the foam cushion from the chassis.



2. Using a T10 torx screwdriver, remove self-tapping screws from the chassis, and remove the chassis from the rear housing.



Replacing the Chassis

1. Position the chassis on the rear housing as shown and install the self-tapping mounting screws.
2. Replace the foam cushion on the chassis where shown in the photo above.
3. Replace the clutch mechanism.
4. Replace the AC power filter.
5. Replace the power supply.
6. Replace the DC-DC board.
7. Replace the DC-DC cable.
8. Replace the hard drive.
9. Replace the optical drive.
10. Replace the hard drive and optical drive fans.
11. Replace the logic board.
12. Replace the CPU fan.
13. Replace the speakers.

14. Replace the display panel.
15. Replace the IR Board.
16. Replace the lower EMI shield.
17. Replace the front bezel.
18. Replace the memory access door.

Rear Housing

Tools

No tools are required to remove the rear housing in addition to those referenced below.)

Remove and Replace the Rear Housing

To remove the rear housing, follow steps for removing the parts below. Reverse these steps to replace the rear housing.

- Access door
- Front bezel
- Lower EMI shield
- LCD display
- Speakers
- Optical drive
- Hard drive
- Optical drive fan
- Logic board
- Hard drive fan
- CPU fan
- DC-DC board
- DC-DC power cable
- Power supply
- Camera cable
- AC line filter
- Clutch
- AirPort Antenna
- Bluetooth Antenna
- Chassis

Service Source

Troubleshooting

iMac(Early 2006 17-inch)

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General Information

Serial Number Location

iMac (Early 2006) serial numbers are located on the bottom of the computer stand.

Power On Self Test (POST)

Intel-based Macs such as the iMac (Early 2006) rely on a combination of tones and blinking LEDs to display Power On Self Test (POST) error codes.

If the computer detects out-of-specification memory or no RAM installed, the screen will be black and the power LED on the front of the computer will blink once a second to indicate bad or no RAM. Bad RAM can include physically damaged, the incorrect type, or not present.

If the RAM is good enough to pass the POST test but it is marginal and cannot be used by the operating system, the computer will show a gray screen, three tones will sound and the power LED on the front of the computer will blink three times, pause, and repeat until the computer is turned off.

The solution to both these situations is to install known good memory.

DDR Memory

The iMac (Early 2006) computer has two SDRAM slots in the bottom of the computer. The iMac ships from the factory with at least 512 MB of DDR2 SDRAM installed into the top slot. (The computer may come with more RAM in the top slot or RAM in the bottom slot, depending on how the computer was ordered from Apple.)

The maximum amount of RAM you can install in the iMac is 2 GB total (a 1 GB SO-DIMM in each of the two slots). You can use small-outline dual inline memory modules (SO-DIMMS) of 512 MB or 1 GB that meet all of these criteria:

- - PC2-5300
- - unbuffered
- - nonparity
- - 200-pin
- - 667 MHz DDR2 SDRAM

NOTE: DIMMs with any of the following features are NOT supported in this iMac:

- - registers or buffers

- - PLLs
- - ECC
- - parity
- - EDO RAM

How to reset the System Management Controller (SMC)

The System Management Controller (SMC) is a chip on the logic board that controls all power functions for your computer. If your computer is experiencing any power issue, resetting the SMC may resolve it. The SMC controls several functions, including:

- Telling the computer when to turn on, turn off, sleep, wake, idle, and so forth.
- Handling system resets from various commands.
- Controlling the fans.

Note that resetting the SMC does not reset the PRAM. Resetting the SMC will not resolve issues in which your computer is unresponsive—in these situations, restarting your computer will generally suffice. If your computer isn't responding, perform these steps one at a time, in this order, until the issue has been resolved:

1. Force Quit (Option-Command-Escape).
2. Restart (Control-Command-Power).
3. Force Shut Down (press the power button for 10 seconds).

Resetting the SMC can resolve some computer issues such as not starting up, not displaying video, sleep issues, fan noise issues, and so forth. If your computer still exhibits these types of issues after you've restarted the computer, try resetting the SMC.

To reset the SMC on an iMac (Early 2006):

1. From the Apple menu, choose Shut Down (or if the computer is not responding, hold the power button until it turns off).
2. Unplug all cables from the computer, including the power cord.
3. Wait at least 15 seconds.
4. Plug the power cord back in, making sure the power button is not being pressed at the time. Then reconnect your keyboard and mouse to the computer.
5. Press the power button on the back to start up your computer.

Note: The iMac (Early 2006) does not have a button on the main logic board for resetting the SMC, which eliminates the need to remove the computer's cover to reset it (as required for some other models).

Symptom Charts

How to Use the Symptom Charts

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to the product. Because cures are listed on the charts in the order of most likely solution, try the cures in the order presented. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next cure.

Note: If a cure instructs you to replace a module, reinstall the original module before you proceed to the next cure.

Power Issues

No Power.

The iMac (Early 2006) will not turn on. The display remains black and there are no sounds from the fans or drives.

1. Verify the power outlet is good. Plug a different device into the socket to ensure there is power, or plug the iMac into another outlet. Does the iMac power on now?

    Yes. Resolved. Bad outlet.

    No: Go on to the next step.

2. Check the power cord. Use a known good power cord. Does the iMac power on now?

    Yes: Your power cord has failed. Replace the AC power cord.

    No: Go on to the next step.

3. Check the connection of the power cord on both ends. Verify that the power cord is securely plugged into both the AC outlet and back of the computer. Does the iMac power on now?

    Yes: You may have a loose fit to your power cord. Replace the AC power cord and test.

    No: Go on to the next step.

4. **Remove and reinstall the SO-DIMM memory** modules, located in the bottom of the computer. Does the iMac power on now?

    Yes: Issue resolved.

    No: Go on to the next step.

5. Plug a bus powered FireWire device in like an iPod using a FireWire cable or other FireWire drive or device with a power LED. Does the iPod show charging or the FireWire device show a power LED on?

    Yes: The AC Power Inlet is good. Go on to the next step.

    No: AC power is not being detected. If you've verified the outlet and power cord, replace the AC Power Inlet.

6. Plug a bus powered USB device into the USB ports on the rear of the computer like a keyboard, iPod Shuffle or USB 2.0 iPod using a USB cable and press the power button. Does the iPod show power or the keyboard caps lock LED light?

    Yes: The power supply is functioning. Go on to the next step.

    Yes, but only for a moment: The power supply cannot maintain power; replace the AC/DC power supply. If the problem continues replace the DC/DC power supply/inverter.

    No: The Power supply has failed. Replace the AC/DC power supply. If the problem continues replace the DC/DC power supply/inverter.

7. At this point in the Power On process, you should hear a boot chime and see the front LED on the computer light up. When the main logic board and LCD panel communicate to deliver video, the front LED should go out. Does the Front LED go off?

Yes: The LCD and main logic board have communicated. If there is no picture on the display, follow No Video troubleshooting.

No: Your logic board is not communicating with LCD panel. Open the unit and re-seat the TMDS cable and test again. If the issue persists, replace the main logic board.

Audible buzzing, whining, or ticking noise

The iMac (Early 2006) contains several mechanical devices such as motors and fans that may make audible buzzing, ticking, or whining noises when they are operating in a normal manner. The sounds will vary depending on how the system is used.

When troubleshooting abnormal noises try the following:

1. Verify that the computer is running a supported version of the Mac OS X operating system. If an earlier version of the operating system has been installed then the fans may run at excessive speeds.
2. Determine that this noise is related to the computer by removing and shutting down all other devices in the vicinity of the computer that could be causing a sound.
3. Eject any media inserted into the optical drive. The optical drive will make a variety of normal sounds when accessing the optical media.
4. Quit all applications and test the computer again. Processor intensive applications may cause the fans to run at a higher RPM and therefore be more audible.
5. Boot to Apple Service Diagnostic v. 3S100 or later and select the EFI test suite by holding down the D key during startup. The diagnostic tests fan speeds and thermal sensor functionality. Should tests fail, replace any parts indicated by the diagnostic.
6. Reboot the computer and check the computer again. If the noise persists and is unusually loud, contact Apple Technical Support.

No Video

No Video, No Boot Chime, White LED ON (Symptom 1)

The iMac (Early 2006) will turn on (indicated by the front LED ON), but there is NO boot chime and No Video on the display. The faint sound of the fans, hard drive, and optical drive may also be heard.

1. Reset the SMC (Formerly SMU).
   - Turn off the computer by choosing Shut Down from the Apple menu, or by holding the power button until the computer turns off.
   - Unplug all cables from the computer, including the power cord.
   - Wait 15 seconds.
   - Plug in the power cord while simultaneously pressing and holding the power button on the back of the computer.
   - Let go of the power button.
   - Press the power button once more to start up your iMac.

   Does the computer display video after successfully resetting the SMC?

   Yes: Problem solved.

   No: Continue to next step.

2. Verify that only supported SDRAM memory has been installed and that it has been installed correctly. Unsupported and/or defective memory can prevent the iMac (Early 2006) from booting. It may be necessary to install known good memory for testing purposes and replace any unsupported or defective SO-DIMM's identified during this process.

   Does the computer display video after verifying and/or replacing the memory with known good memory?

   Yes: Problem solved. Verify full system functionality before return the system to the customer.

   No: Replace the logic board.

No Video, Boot Chime heard, White LED ON (Symptom 2)

The iMac (Early 2006) will turn on, the boot chime can be heard, a white LED appears on the front bezel and sounds from the fan or drive activity can be heard, but the display has no picture or color.

1. Check if the computer is sleeping. Press the space bar to wake the computer from sleep mode. Did the computer wake from sleep?

   Yes: Put the computer to sleep from the Apple menu and wake the computer again to test. Check Energy Saver setting to see when the computer has been designated to sleep.

   No: Continue to next step.

2. Reset your computer's PRAM (Parameter RAM):
   - If your iMac is on, turn it off by holding the power button until the unit powers off. You

should hear the fans go quiet.

- While the computer is off, with your left hand, hold down the Apple key, the Option key next to it, and the letter "R" key on the keyboard. When you have these keys all pressed down, push the power button with your right hand and then quickly move that hand to hold down the letter "P" on the keyboard. Keep these four keys pressed while the computer starts up.
- Make sure you hold down the four keys (P - R - Apple - Option) while the computer is starting up. When you hear the computer's start up chime for the second time, you can let go of the keys on the keyboard.
- If you didn't hear at least two startup chimes, go to the top of this section and begin again. It's important that you hear two startup chimes when performing this procedure. This indicates that you have successfully reset the computer's PRAM (Parameter RAM).

3. Does the computer display video after successfully resetting the computer's PRAM?

Yes: Restart the computer from the Apple menu and make sure the computer is now working correctly.

No: Continue to next step.

4. Make sure the machine is powered off; power off the machine by holding in the Power Button on the rear of the machine. Turn on the machine. Observe the white LED on the front bezel during startup; it should go out after a few moments. Did the LED go off?

Yes: If the LED went off, this indicates that the main logic board has communicated with the LCD display for video signal and your main logic board should be good. You can confirm by connecting an external monitor and checking to see that you have video out. Go to Step 8.

No: Continue with the next step to reset system power management (SMC).

5. Reset the SMC (Formerly SMU).

- Turn off the computer by choosing Shut Down from the Apple menu, or by holding the power button until the computer turns off.
- Unplug all cables from the computer, including the power cord.
- Wait 15 seconds.
- Plug in the power cord while simultaneously pressing and holding the power button on the back of the computer.
- Let go of the power button.
- Press the power button once more to start up your iMac.

Does the computer display video after successfully resetting the SMC?

Yes: Press and hold the power button until the computer powers off. Start the computer again and confirm that front LED is reliably going off. If the computer still has no video but the LED is reliably going off, continue with step 8.

No: Go to the next step.

6. Unplug the iMac and remove the SDRAM. Replace with known good SDRAM. Plug the iMac back in and power the unit on. Does the front LED go off after a few moments now?

Yes: Replace the original SDRAM and test again. If the front LED does not go off with the only the original SDRAM installed, replace the SDRAM. If the LED is now reliably going off after a few moments, but yet you still do not have any video, go to step 8.

No: If the LED remained on, the main logic board is not communicating with the LCD panel to generate video. Replace the main logic board.

7. With the LED going off, you may have a No Backlight condition or an LCD failure. In a dim room, turn the display at an angle to you and look closely at the display. Is the display completely black or can you see a dim, purplish light or glow to the display?
   - Completely black: Replace the inverter
   - Dim purplish light or glow: Replace the LCD panel.

Display is tinted another color.

1. Reset the parameter RAM. Press the Command-Option-P-R keys. When you keep all the keys held down, you will hear the startup chime over and over again (about every ten seconds) until you let go. After you hear the second chime, you can let go of the keys.
   Does the computer display video after successfully resetting the computer's PRAM?
   Yes: Problem resolved. Restart the computer from the Apple menu and make sure the computer display is no longer tinted another color.
   No: Continue to the next step.

2. Connect an external monitor to the mini-VGA port. Does the external display exhibit the same color tinting?
   Yes: Replace the logic board.
   No: Check the TMDS cable connection. If connected and same color tinting persists, replace the TMDS cable. Does color tinting persist after changing the TMDS cable?
   Yes: Replace the LCD display panel.
   No: Problem solved. Restart the computer from the Apple menu and make sure the computer display is no longer tinted another color.

Display

When displaying a single color over the screen area, the LCD panel shows one or more pixels that are not properly lit

Active-matrix LCD technology uses rows and columns of addressable locations (pixels) that render text and images on screen. Each pixel location has three separate subpixels (red, green, and blue) that allow the image to be rendered in full color. Each subpixel has a corresponding transistor responsible for turning the subpixel on or off.

There are typically millions of these subpixels on an LCD display. For example, the LCD panel used in the Apple Cinema HD display is made up of 2.3 million pixels and 6.9 million red, green, and blue subpixels. Occasionally, a transistor does not work perfectly, which may result in the affected subpixel being turned on (bright) or turned off (dark). With the millions of subpixels on a display, it is quite possible to have a low number of faulty transistors on an LCD. Therefore, a certain number of subpixel anomalies is considered acceptable. Rejecting all but perfect LCD panels would significantly increase the retail price for products using LCD displays. These factors apply to all manufacturers using LCD technology—not just Apple products.

To determine whether or not the display has an acceptable number of pixel anomalies, follow the steps below:

1. Set the display image to one of the following colors: all-white display, all-red display, all-green display, or all-blue display.
2. Using a jeweler's loupe, pocket microscope, or other magnifying device, identify and count each subpixel anomaly:
   • Bright subpixel anomaly = subpixel that is always on
   • Dark subpixel anomaly = subpixel that is always off
3. **Important:** Check the number of subpixel anomalies with the following chart:

LCD Size (inches)	**Acceptable Number of Subpixel Anomalies**			**Replace the Display**		
	Bright	Dark	Both	Bright	Dark	Both
17 to 20	up to 4	up to 6	up to 8	5 or more	7 or more	9 or more

4. If the number of subpixel anomalies exceeds the acceptable number listed in the chart, replace the LCD panel.
5. If the number of subpixel anomalies is acceptable, explain to the customer that the pixel anomalies are within specifications, and no repair is necessary.

Important: Do not release the specifications to customers. Instead, inform them that a certain number of subpixel anomalies is considered acceptable, and these factors apply to all manufacturers using LCD technology—not just Apple products.

Hard Drive

Flashing question mark, or an alternating question mark and Mac OS (face or a folder)

Note: When troubleshooting hard drive problems it is a good idea, if possible, to back up any important data. Some troubleshooting steps may require erasing the contents of the hard drive.

1. Boot from the system CD that came with the computer, and open Disk Utility. Does the hard drive show in Disk Utility?
   Yes: Run Repair Disk and Repair Permissions to correct any directory and permissions issues. Go on to Step 2.
   No: Go to Step 3.
2. Did Disk Utility successfully repair directory or permissions?
   Yes: Restart the computer to the hard drive. Go on to Step 3.
   No: Go to Step 3.
3. Did the computer successfully start to the internal Hard Drive?
   Yes: Run Apple Hardware Test 3A100 or later for this machine and return to the customer if it passes.
   No: Boot the machine to Apple Hardware Test 3A100 or Apple Service Diagnostic 3S100 (or later).
4. Did the machine successfully boot to the Diagnostic?
   Yes: Run the test suites.
   No: Make sure you're using the correct version of the Diagnostic, and that the disc is able to boot another machine that it supports. If so, then try booting from an external optical drive. If this is successful, you should replace the optical drive and retest the machine booting to the diagnostic disc.
5. Did the tests pass?
   Yes: Reinstall the System Software that came with the computer and test.
   No: Replace the component (s) indicated by the test results.

Hard Drive Issues

Note: The following information is for Intel-based and PPC Macintosh drive compatibility

- Drives to be used in booting Intel-based Macintosh hardware should be formatted and partitioned with an Intel-based Macintosh disk utility running on Intel-based Macintosh hardware. That should ensure you get the correct default partition map and structure for reliable booting.
- Intel-based Macintosh CPUs in Target Disc Mode will only mount on PPC machines running Mac OS X 10.4 or later, and may show one contiguous partition rather than separate partitions on the host machine.
- Always make sure to use the OS that came with the machine if you need to reinstall software (ask the customer for the discs if necessary), and the diagnostics specifically designated for that hardware.

System hangs during normal startup process

1. Boot from the system CD that came with the computer and see if the hard drive mounts on the desktop.
2. Using Drive Setup, reinstall the system software drivers for the hard drive.
3. Using Drive Setup, reinitiation the hard drive.
4. Check all cable connections to and from the hard drive.
5. Replace the hard drive data cable.
6. Replace the hard drive.
7. Replace the logic board.

Optical Drive

CDs or DVDs don't show up on the Desktop.

1. Select Preferences from the Finder menu and make sure the option to show CDs, DVDs and iPods is checked: in the General window as shown below.

2. Select System Preferences from the Apple menu and open the CDs & DVDs preferences window. Make sure that audio CDs are set to launch iTunes and movie DVDs set to launch DVD Player when those media are inserted, as shown below.

CDs & DVDs
Show All
When you insert a blank CD: Ask what to do
When you insert a blank DVD: Ask what to do
When you insert a music CD: Open iTunes
When you insert a picture CD: Open iPhoto
When you insert a video DVD: Open DVD Player

3. Check that the drive can read discs normally. Insert an audio CD and check whether it shows up on your desktop or launches iTunes.
   Does the audio CD mount on the desktop or in iTunes?
   Yes: The drive seems to read CD discs okay. Go on to Step 4.
   No: Make sure the disc is readable by other computers. Try other CD discs. If none mount or no audio CDs launch iTunes, replace the optical drive."

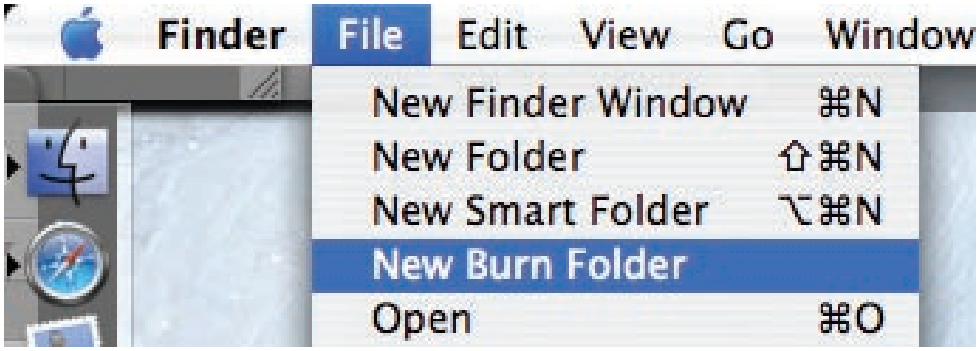
4. Eject the audio CD and insert the iMac Software Install and Restore DVDs that came with the customer's computer, or insert a DVD movie.
   Does this disc show up on the desktop, or does the movie launch DVD Player?
   Yes: The computer is reading CD and DVD media. This may be related to a specific disc or discs the customer is using and you should examine those discs.
   No: The optical disc is reading CD media, but not DVD media. Try other DVD discs. If none mount or movie DVDs do not launch DVD Player, replace the optical drive flex cable.

5. If after replacing the optical drive flex cable the drive still won't mount any optical media, replace the optical drive. If the issue persists, then replace the logic board.

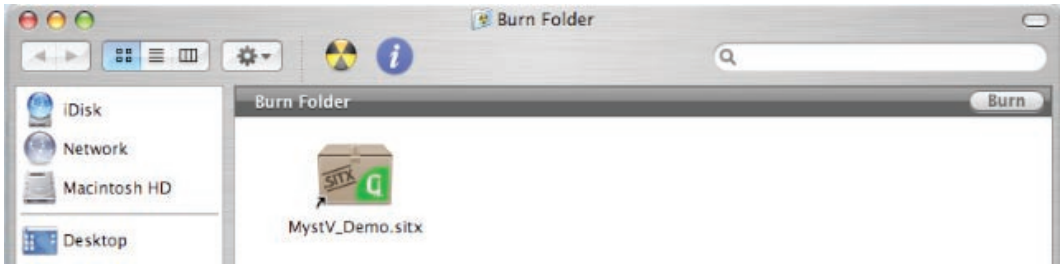
The computer won't burn discs.

1. Check whether the drive can read CDs and DVDs normally. Perform the steps above for "CDs or DVDs don't show up on the Desktop."

2. Try a test burn by creating a Burn Folder, as follows.
   • In the Finder, choose "New Burn Folder" from the File menu.



   • Open the Burn Folder, drag an item inside for testing, and click "Burn" in the upper right corner of the window.



   • When prompted, insert a blank disc and follow the dialog instructions.
   Does the disc burn successfully (problem solved), fail with an error, or is the disc ejected?

3. If the disc fails to burn with an error, check for these error messages.
   Unknown Error -2147352480. See Knowledge Base article 25480 and 25750 for more information.
   Buffer underrun error. See Knowledge Base articles 25480 and 25750 for more information.
   Unknown Error. If you see "Unknown Error" without "-2147352480", you will want to see Knowledge Base article 152224 for more information.

4. If the blank disc is ejected, try another blank disc. If the issue persists, try another brand and speed of blank media; if you're using blank CD media, see if this happens with blank DVD media. If the drive consistently rejects all blank media, or only rejects blank CD media while accepting blank DVD media or vice versa, replace the optical drive flex cable and test.
   Does the drive successfully burn to disc after replacing the optical flex cable?
   Yes: Problem solved.

No: Replace the optical drive. Does it burn correctly now?

Yes: Problem solved.

No: Replace the logic board.

Discs won't insert.

1. Is there a disc already in the drive?
   Yes: Eject the disc before inserting another. Refer to Knowledge Base article 106752, "Macintosh: How to Eject a Disc When Other Options Do Not Work". If none of these options will eject the disc, you may have to disassemble the drive to recover the disc. See Knowledge Base article 86382 - Macintosh: How to Remove a Stuck Disc From a Slot-Loading Drive.
   No: Reseat the optical drive. Perform the "Optical Drive" procedure in Take Apart to reseat the drive in the mounting aperture and reconnect the optical flex drive cable connector.
2. After reinstalling the optical drive, can you now insert a disc?
   Yes: Issue resolved. Run diagnostics and return the system to the customer.
   No: Replace the optical drive flex cable.
   Yes: Problem solved. Run diagnostics and trying inserting a disc again.
3. After replacing the optical drive flex cable, can you insert a disc now?
   Yes: Issue resolved. Run diagnostics and return the system to the customer.
   No: Replace the optical drive.

Optical disc constantly ejects

1. Disconnect all peripheral devices, especially the mouse in cases where the disc is constantly ejecting. Retest. If the issue is resolved, reconnect peripherals one-at-a-time until faulty peripheral is identified.
2. Try cleaning the disc. If the disc is dirty or scratched, it may not mount.
   Is the issue resolved?
   Yes: Problem solved.
   No: Try a different disc. If the issue persists, go on to the next step.
3. Boot from Apple Hardware Test (hold down the "D" key at startup). If you can boot to this volume, run the Quick and Extended tests.
   Does the unit pass the tests?
   Yes: Restart to the internal hard drive and test again.
   No: Replace the component (s) indicated by the test results. If you cannot boot to Apple Hardware Test because it ejects, go on to step 4.
4. Boot from the system install DVD (use Startup Manager, hold down the Option key at startup). If you can boot from this volume, perform an Archive and Install with the Install DVD that came with the computer and test.
   Is the issue resolved?
5. **Yes:** Problem solved.
   No: If you cannot boot to Apple Hardware Test or to the Install DVD because they eject, reseat the optical drive flex cable and retest.
6. Replace the optical drive flex cable.
7. Replace the optical drive.
8. Replace the logic board

Fan Sound

Fans running at full speed after the computer turns on

The customer may have entered a diagnostic mode that causes the fans to run at full speed.* Restarting the system will not restore normal fan operation. To solve the problem, the user or technician should do the following:

1. Shut down the system.
2. Disconnect the power cord and wait 15 seconds.
3. Reconnect the power cord and wait 5 seconds.
4. Power on the system.

***Note**: Customers reporting this symptom should be told to press the power button AFTER the power cord has been fully inserted. Inserting the power cord while pressing the power button will cause the fans to run at full speed.

Loud fan noise coming from inside the computer

The iMac G5 (20-inch iSight) has a trio of fans that circulate air throughout the system. It also includes temperature sensors, and advanced thermal software that spins the fans fast or slow as needed. As the system usage increases, the fans will adjust their speed using advanced thermal software to meet the cooling needs of the system.

Under normal conditions, rotating fans will make a slight hum that varies in relationship with their rotational speed and the amount of air that they are moving. In addition, the normal functioning of the hard drive and optical drive will generate additional whirring and scratching sounds that may be audible. All of these sounds are normal and do not indicate a failure with your computer.

To begin troubleshooting a possible fan issue, we need to qualify the sound that you're experiencing.

1. Does the sound occur only under specific light/heavy usage conditions?

   Yes: CPU intensive applications such as iTunes, Garage Band, DVD Player, etc., or two or more applications open at once will cause the fans to run at an increased rate making them more noticeable. If the sound only occurs when one or more of these applications is running, this is normal.

   No: If the sound isn't affected by CPU intensive application it may be due to other factors. Go on to the next step.

2. Is the sound always present, or does the sound vary?

The sound is always present: The normal functioning of the hard drive and optical drive will generate additional whirring and scratching noises that may be audible. Check whether this sound is related to one of the components. Go to step 4.

The sound varies: Under normal conditions rotating blowers will make a slight hum that varies in relationship with their rotational speed and the amount of air that they are moving. Let's see if this is indeed the case. Go to Next Step.

3. Are the fans making a normal humming sound that increases/decreases in relation to processor usage? As the fans increase their speed to cool the system the sound level will increase.

   Launch the Activity Monitor application included with Mac OS X in the Utilities folder to determine whether the noise corresponds with heavy usage of the CPU. Does fan activity increase / decrease with the CPU Usage graph in Activity Monitor? Check by running CPU intensive applications such as iTunes.

   Yes: This is normal operation and none of the fans require replacement.
   No: If the fan activity does not coincide with CPU usage, the sound you're hearing may not be fan activity. Go to the Next Step.

4. The normal functioning of the hard drive and optical drive will generate additional whirring and scratching noises that may be audible. We can isolate these noises by booting the computer to the iMac Install Mac OS X Install Disc 1.

   - Place the disc in the drive, and restart your machine while holding down the "C" key as the machine starts up.

   - Once at the Installer window, choose Open Disk Utility from the Installer Menu.

   - Once Disk Utility is open, select the system's hard drive and on the toolbar choose Unmount. **Note:** if the drive has multiple partitions, unmount each of these partitions. This will spin down the hard drive. The optical drive will also be busy at this time; wait a moment for the optical drive to spin down also and then listen to the machine.

   Is the sound still present?

   Yes: With the hard drive and optical drive inactive, all you should be hearing are the fans in the machine. While booted to the CD, these fans should be running at a lower level since CPU activity is low with both drives inactive. Fan sound that includes objectionable ticking, whistling, or squealing may require further investigation and/or replacement of the particular fan. Go on to the next step.

   No: The normal functioning of the hard drive and optical drive will generate additional whirring and scratching sounds that may be audible. All of these sounds are normal and do not indicate a failure with the machine. If you wish to check the health of the hard drive, see

article 152349, "Replacing a disk before it fails."

5. Shut down the computer, remove the power cord and any other connected cables, and remove the access door, front bezel, and EMI shield.
   Stand up the computer, plug it in, and start it up by pressing the external power button.

   As the machine starts up, listen carefully to each of the three fans, and see if you can locate the fan from which the objectionable ticking, whistling, or squealing sound is coming. The CPU fan is the left-most fan, the hard drive fan is in the center, and the optical drive fan is on the right.

   Can you pinpoint the fan making the sound?

   Yes: Replace the noisy fan.

   No: If you can hear an objectionable ticking, whistling, or squealing sound, but you cannot identify the source of the sound, contact Apple Technical Support.

Fans are running at a constant high speed

If the fans on the system are running at a constant high speed, or ramp very quickly to high speed and do not vary once this speed is reached, the fans are most likely receiving incorrect thermal input. Follow these steps:

1. Reset the SMC and then test to see if the fans still exhibit the issue.
2. Boot to Apple Service Diagnostic v3S100 EF1 tests. This will test the fans and thermal input of the sensors. If the tests fail, replace the component (s) indicated by the test.
3. Verify that the hard drive temperature sensor cable, and the optical drive temperature sensor cable are plugged in correctly. If necessary, replace the hard drive and optical drive temperature sensor cables.
4. Replace the hard drive and optical drive temperature sensors.
5. Replace the hard drive.
6. Replace the logic board.

AirPort

Not able to connect wirelessly with AirPort

1. From the Apple menu, choose About this Mac.

2- Click on More Info. System Profiler should open.

3- In System Profiler, in the column on the left, look under Network for a line called "AirPort Card". Select that line.

4- Does the section to the right say "No Information Found"?

Yes: The computer doesn't realize it has an AirPort card installed. Go to step. 5

No: The iMac recognizes that it has an AirPort card installed. Go to step 6.

5- Remove the front bezel, lower EMI shield, and two card mounting screws. and reseat the AirPort card. Re-install the two card mounting screws and check System Profiler again to see if the computer sees the AirPort card. Does it recognize the card now?

Yes: Problem solved. Replace the lower EMI shield and front bezel and re-test the system to verify that the original symptom is resolved.

No: Replace the AirPort card. Refer to the Take Apart - Logic board procedure for replacement instructions. If the issue persists after replacing the AirPort card, replace the logic board..

6- Now that we know the iMac recognizes the AirPort card, check the antenna. If the antenna is not plugged in all the way, you may have very short AirPort range.

7- Remove the access door, front bezel, lower EMI shield, and right speaker, and the two AirPort card mounting screws . Disconnect the card, turn it over and reconnect the antenna cable connectors to the card. Make sure the antenna lead is firmly seated. Replace the card and other components and re-test.

8- If the antenna lead is plugged in properly and the AirPort card is recognized but the problem persists, there are a number of other things that could cause issues with wireless networking. Refer to Knowledge Base document 106858 for more networking information.

9- Replace the AirPort card. Refer to Take Apart/Logic Board.

10- Replace the AirPort antenna. Refer to Take Apart/AirPort Antenna.

11- Replace the logic board. Refer to Take Apart/Logic Board.

IR Remote

Remote won't communicate with system applications such as iTunes or iPhoto, or with the optical drive.

Make sure of the following when using the Apple Remote:

- You are within 30 feet of the front of the computer.
- You have an unobstructed line-of-sight to the front of the computer.
- You are pointing the lens end of the Apple Remote directly at the front of the computer.
- The computer is powered on and awake.
- The "Disable remote control infrared receiver" checkbox in the Security pane of System Preferences is NOT checked.
- Make sure the active application works with Apple Remote. Apple Remote uses Front Row, and from Front Row it can access DVD Player, iPhoto, iTunes, and QuickTime Player.
- Make sure the remote is paired with the computer. Access the System Preferences/Security pane and check "Unpair" if available. Close the Security pane, and re-pair the Apple Remote with the computer. See Knowledge Base article 302545.

1. Use a digital camera to test your Apple Remote.
   If you have a digital camera or DV camera with an LCD display, you can use it to see if your Apple Remote is emitting a signal. Infrared beams are invisible to the human eye, but most digital cameras and video cameras use Charged-Coupled Device (CCD) chips or image sensors that are sensitive to infrared light.

   To use a camera to test your Apple Remote, follow these steps:
   • Turn on your digital camera or DV camera and remove any lens cover.
   • Point your Apple Remote toward the camera lens.
   • Press and hold the Menu button on the remote while looking at your camera's LCD display.
   • If you see a faint blinking light coming from the Apple Remote in the camera's LCD, then the remote is working properly.
   • If you don't see any blinking light in the camera's LCD, replace the battery in your Apple Remote and then test it again with your computer (see "iMac G5 (iSight): How to replace the Apple Remote battery" for instructions). (KBase article 302543)

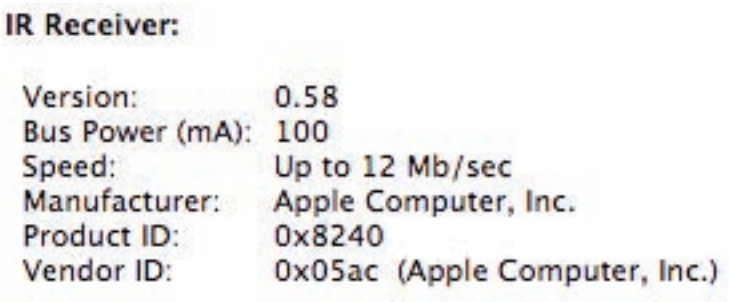
2. Does the IR remote now communicate with an active application that works with Apple Remote?
   Yes: IR remote is functioning correctly.
   No: Replace Apple Remote.

IR Sensor/Receiver

Supported applications do not respond to input from the remote control.

1. Perform the checks above under "IR Remote" to verify that the Apple Remote is functioning correctly, and retest. Do supported applications now respond to input from the IR remote?
   Yes: Problem resolved.
   No: Go to the next step.

2. Verify that the IR Sensor can be seen in the Apple System Profiler. Open the Apple System Profiler and click on the "USB" section. You should see the following listed:



   Do you see the IR Receiver listed under the USB section of the Apple System Profiler?
   Yes: Go on to the next step.
   No: Replace the IR cable and retest. Refer to the "IR Board" procedure in Take Apart.
   Do supported applications now respond to input from the IR remote?
   Yes: Problem resolved.
   No: Replace the IR sensor board and retest. Refer to the "IR Board" procedure in Take Apart. If the issue persists after replacing these parts, replace the logic board.

3. Access System Preferences and click Security. In the Security pane check the following:
   • Make sure "Disable remote control infrared receiver" checkbox is not checked.
   • If "Unpair" is available in the Security pane of System Preferences, another Apple Remote may be paired to the computer (pairing allows only one Apple Remote to control the computer). To delete a pairing between the remote and the iMac G5 (iSight), click Unpair. (You may have to enter your Administrator password to make changes in the Security pane.)
   After making sure these features are disabled, does the Apple Remote control the machine now?
   Yes: Problem resolved.
   No: Replace the IR sensor board and retest. Refer to the "IR Board" procedure in Take Apart.

Built-in iSight Camera

The built-in camera is not recognized.

1. Boot the iMac (Early 2006) to the desktop and launch iChat AV. **Note**: You do not need to be connected to a network to use iChat AV to troubleshoot. Verify that the correct versions of Mac OS X and iChat AV are installed. Reinstall or update software as needed.
2. Open the iChat AV preferences and click on the 'Video' icon. Verify whether the camera is recognized by the iChat AV software. Is the camera recognized?

   Yes: the camera is recognized and video preview is normal: This indicates the camera is functioning. Pull down the 'Video' options from the menu bar and verify that the camera is enabled. The camera must be enabled to function.

   No: the camera is not recognized and no video preview is visible. This indicates the camera may not be functioning properly. Open the iMac G5 and inspect the camera board (inside the front bezel) and the attached cable. Reseat the cable on the camera board and check the other end of the camera cable connection to the logic board. The camera cable connector is on the right side of the logic board, above the AirPort/Bluetooth combo card.
3. Replace the camera cable.
4. Replace the camera board located inside the front bezel.
5. If the iSight camera still doesn't appear in System Profiler on the USB bus after replacing the camera board, replace the logic board.

Camera recognized but no video.

1. Verify that the lens assembly for the iSight camera located in the top middle of the front bezel is not obstructed by anything including Post-It notes or other objects.
2. Replace the camera board in the front bezel and retest.

Camera image quality poor.

The built-in camera is recognized by iChat AV and other supported video applications however the image quality is poor.

1. Verify that the lens assembly for the iSight camera is clean. Fingerprints and other contaminants can affect image quality. Clean the lens using a lint free lens cleaning cloth being while being careful not to scratch the lens.
2. Verify that there is sufficient lighting to produce a good quality image. Lighting which is comparable to that found in a well lit office will product a good quality image. If possible, avoid having a brightly lit background. Diffused lighting is preferred over direct lighting.
3. Launch iChat AV and open the iChat AV preferences. Click on the 'Video' tab. Is the video quality acceptable?
   Yes: The camera is functioning normally. The image quality problems may be caused by bandwidth limitations when using iChat over the internet. Instruct the customer to use the

iChat AV connection doctor feature to verify that there is sufficient bandwidth to have a video iChat session without a significant degradation of image quality.

No: The camera may not be functioning normally. Replace the camera board in the front bezel and retest.

Camera recognized but no audio

1. Open the System Preferences window and click on Sound.
2. Verify that the built in iSight camera has been selected as the device for sound input.
3. Verify that the volume settings (on the slider bar) are appropriate.
4. Launch iChat AV and open the iChat AV preferences. Click on the 'Video' icon. Speak into the microphone while monitoring the microphone level indicator. Does the line level meter respond while you are speaking?

   Yes: The microphone circuit is functioning correctly. Check the preference settings of any supported AV applications the customer is experiencing problems with to make sure that the microphone feature is enabled and that the internal iSight microphone has been selected as the input device.

   No: Inspect the microphone / camera cable attached to the camera board inside the front bezel. If the cable is damaged, replace the cable and retest. If the issue continues, replace the front bezel. The front bezel contains the microphone.

Audio Quality Poor

The camera is recognized but the built-in microphone's audio quality is poor.

1. Open the System Preferences window and click on Sound.
   - Verify that the built-in camera has been selected as the sound input port.
   - Verify that the input volume settings are appropriate. Use the volume level meter to verify settings.
2. Open iMovie and create a new project. Click on the Audio button and record a sound sample. Is the sound quality acceptable?

   Yes: The microphone is functioning normally. The audio quality problems may be caused by bandwidth limitations when using iChat over the internet. Instruct the customer to use the iChat AV connection doctor feature to verify that there is sufficient bandwidth to have an audio iChat session without a significant degradation of audio quality.

   IChat AV allows the user to limit the allocated bandwidth which could impact audio quality. Check the settings and increase the bandwidth if needed.

   No: The microphone may be faulty. Replace the front bezel which houses the microphone.

Speakers

Can't hear sound from the speakers.

1. Disconnect any external microphones, speakers, or headphones.
2. Access System Preferences and select Sound. In the Sound pane, select Output and make sure the Internal speakers are selected as the device for sound output, the Output volume is adequate, and Mute is not selected. Do you have sound now?
   Yes: Problem resolved.
   No: Go to the next step.
3. Reset parameter RAM. Press Command-Option-P-R during startup but before "Welcome to Macintosh" appears. Do you have sound now?
   Yes: Problem resolved.
   No: Go to the next step.
4. Verify that the speaker cable connector is securely attached to the logic board. Do you have sound now?
   Yes: Problem resolved.
   No: Replace the speakers.
5. After replacing the speakers, do you have sound now?
   Yes: Problem resolved.
   No: Replace the logic board.

No audio from internal speakers (may hear a faint putt-putt or motorboating noise)

One method for isolating this issue from other no audio issues is to:

1. Open the sound preference pane.
2. Click on the 'output' tab.
3. Plug in a set of earbuds or external speakers and verify that the 'plug detect' feature is working (the Port setting should change as the external speakers are plugged and unplugged)
4. If the plug detect feature is NOT working then replace the logic board after first verifying that the external speakers are being plugged into the correct port.
5. If the plug detect feature IS working, AND the external audio works then continue to the next step.
6. Remove front bezel and diaper to expose the speakers. Carefully inspect the speaker cable to determine if it has been punctured on any component leads. Add electrical tape (kapton is OK too) to the punctured area and then reroute the cable as shown in the picture to prevent further damage.
7. Retest the internal speakers to make sure that the audio has been restored and that the 'putt putting' sounds are gone.

I hear sound out of only one speaker.

1. Are there any external microphones, speakers or headphones plugged into the iMac?

   Yes: Disconnect any external microphones, speakers, or headphones. Do you hear audio from both of the built in speakers on your iMac?

   Yes: Good. It looks like the built-in speakers are working properly. This may be an issue with the microphone, speakers or headphones that were plugged into your iMac. Please work with the manufacturer to troubleshoot this issue.

   No: Go to step 2.

   No: Check your speaker balance. If your balance setting was set to the left or right speaker, you would only hear sound from one speaker. Go to step 2.

2. Open System Preferences. (System Preferences can be found under the Apple menu.)
3. Click once on the sound icon.
4. Click once on the Output tab.
5. Make sure your balance setting is in the middle. After adjusting the audio balance, do you have audio from both speakers now?
   Yes: It looks like the issue was the balance was not set properly.
   No: Replace the speakers.
6. If the speakers did not solve the problem, replace the logic board.

Mouse

My mouse doesn't work at all.

1. Turn over the mouse and check the if the red LED on the underside of the mouse. Is the LED lit?

   Yes: The mouse has power. Try using the mouse on another surface. Non-reflective, opaque surfaces without repetitive patterns work best. The surface should be clean, but not shiny. Optical mice won't work on glass, mirrored surfaces, glossy materials or mouse pads with pictures.

   No: There is no power to the mouse. Try plugging the mouse into one of the USB ports on the machine. If the mouse won't power on from any USB port, try it on a known good machine. If the mouse fails to power on with known good machine, replace the mouse. If the mouse will power on with a known good machine, replace the main logic board.

2. If the underside LED is lit and the surface is good, and the mouse still does not track, try plugging the mouse into another USB port on the machine. Does the mouse track now?

   Yes: Issue resolved. Try the other USB ports on the system to make sure you don't have a bad port.
   No: Try using a known good mouse. If a known good mouse resolves the issue, replace the mouse. If a known good mouse does not resolve the issue, replace the main logic board.

My mouse works intermittently (the cursor freezes randomly) or is slow to respond.

1. Try using the mouse on another surface. Non-reflective, opaque surfaces without repetitive patterns work best. The surface should be clean, but not shiny. Optical mice won't work on glass, mirrored surfaces, glossy materials or mouse pads with pictures. Does the mouse track correctly on a proper surface?
   Yes: Issue resolved.
   No: Check the Mouse Tracking setting in the Mouse control panel.

2. Boot to another volume (like the System Install Disc). Does the mouse track properly now?
   Yes: Reinstall System Software
   No: Try a using a known good mouse. If a known good mouse resolves the issue, replace the mouse. If the issue persists with a known good mouse, replace the main logic board.

Keyboard

Certain keys or none of the keys on the keyboard function.

1. Unplug all devices from your computer, including your mouse and keyboard as well as printer, scanner, external hard drives, and hubs. (Warning: Some devices may require you to perform steps before it is safe to unplug them, e.g, external storage devices.) Be sure to unplug your hub, if you have one.
2. Plug your keyboard into the back of your computer firmly and securely. Plug your mouse into the back of your computer firmly and securely. Take special care to make sure the connector is completely in the socket. Go on to step 3.
3. Does your keyboard work now?

   Yes: Problem solved.

   No: Unplug your keyboard and plug it into another USB slot on the back of your iMac. Does it work now?

   Yes: Replace the logic board.

   No: Unplug your keyboard and plug your mouse into the port the keyboard just occupied. Go on to step 4.
4. Does your mouse work now?

   Yes: Replace the keyboard.

   No: Replace the logic board.

My keys are sticky or slow to respond.

1. Try a known good keyboard.
2. Open System Preferences. Click on the keyboard and mouse icon. Adjust the "key repeat speed and delay until repeat" rate.
3. Replace the keyboard.

When I type, strange characters appear on the screen.

1. Depending on your iMac's settings, a simple keystroke can change your keyboard from English to Japanese. This can result in some pretty funny characters showing up when you type. To switch to the US keyboard,
2. Open System Preferences.
3. Click on the International icon.
4. Click on the Input Menu near the top of the screen.
5. Scroll down the list and uncheck any non-US keyboard layouts.
6. Close the System Preferences. Try typing a few characters. Did is solve the problem?

Yes: Problem solved.
No: Replace the keyboard.

The USB port on my keyboard doesn't work.

1. Unplug all devises from your keyboard.
2. Plug your Apple mouse into the left USB port on your keyboard. Does your mouse work when it's plugged into this port?

   Yes: Now plug the mouse into the right port. Does it work?
   Yes: Try a known good keyboard.
   No: Try a known good mouse to rule out the mouse. Then go to step 3.
   No: Try a different mouse or keyboard.
3. Now unplug the keyboard from the USB port on the back of the iMac, and plug the mouse into the port the keyboard had been in. Does the mouse work now?
   Yes: Replace the keyboard?
   No: It appears that your USB port isn't functioning properly. Go on to step 4.
4. Replace the logic board.

Error Beep(s)

Refer to **Power On Self Test (POST)** covered in the General Information section of this chapter.

USB

A USB device doesn't work

1. Please unplug all of your USB devices from your iMac except your Apple Keyboard and Apple mouse.
2. Now plug your device directly into the back of your iMac. Does it work as expected now?

   Yes: Your device works when plugged directly into the computer. This indicates a conflict with one of the other USB devices. You can test by gradually adding your devices back and seeing where the issue occurs, then contacting the manufacturer of the device(s)) for assistance.

   No: Unplug your device from the iMac and plug the keyboard into the port your device just occupied. Is your keyboard still working?

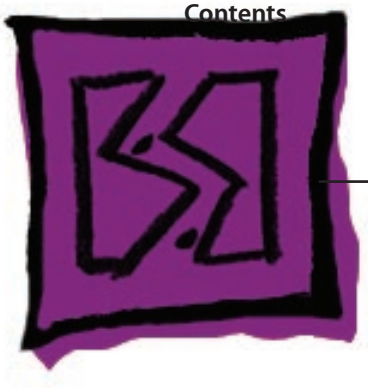
   Yes: Your Apple Keyboard works when plugged into the USB port your device was plugged into. This points to an issue with your device. Please review the documentation that came with your device. Install any necessary drivers and contact the manufacturer of your device for assistance.

   No: Replace the logic board

I see a message saying not enough power to function.

It appears that this device needs to be plugged into the computer's USB port, rather than the keyboard USB port. Any USB device connected to the keyboard needs to be either a self-powered device (a USB device with its own AC power supply), or a low-power device (a device that does not need a large amount of voltage to operate). Your device may draw more power than the keyboard can provide.

Service Source



Views

iMac (Early 2006 17-inch)

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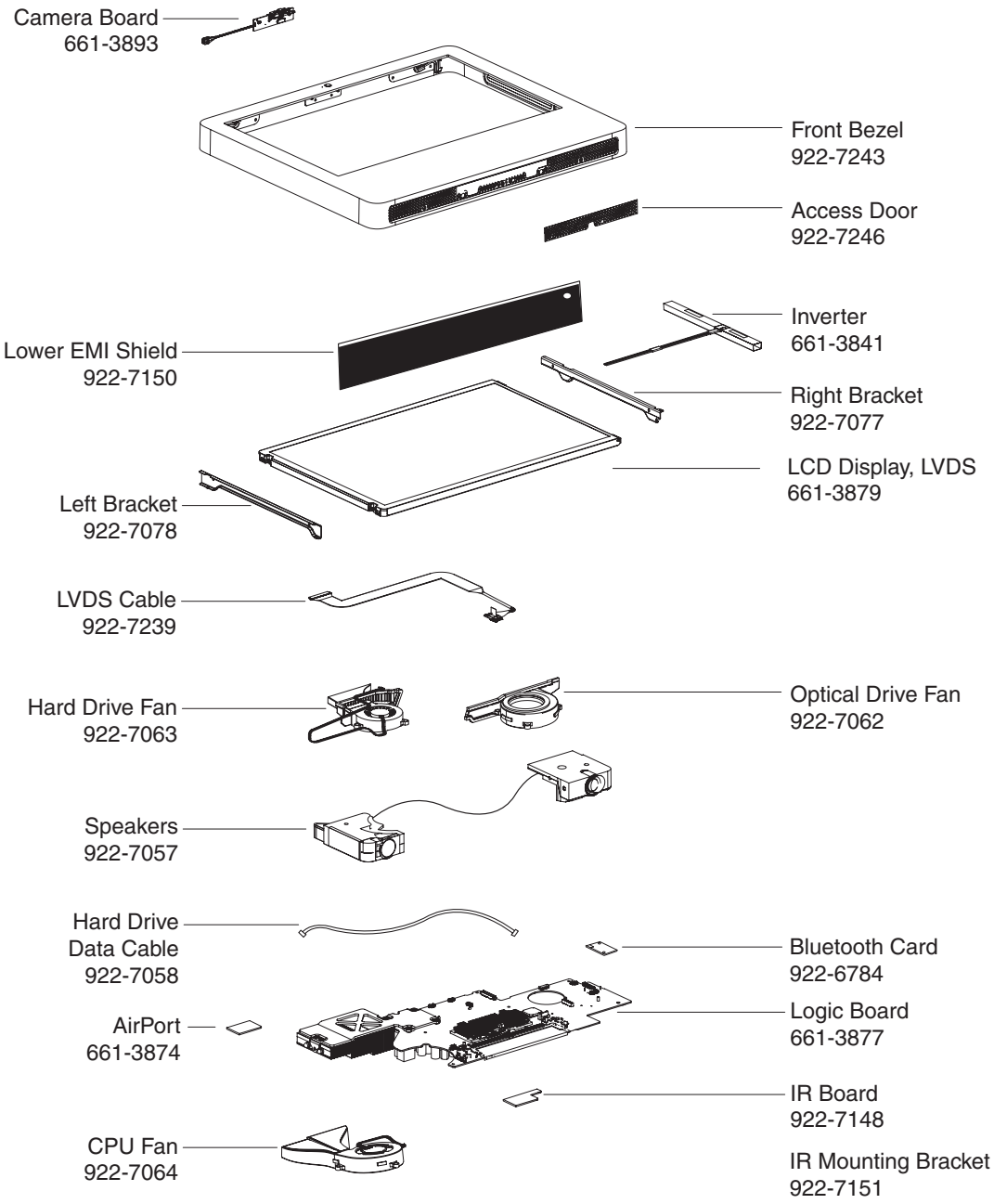
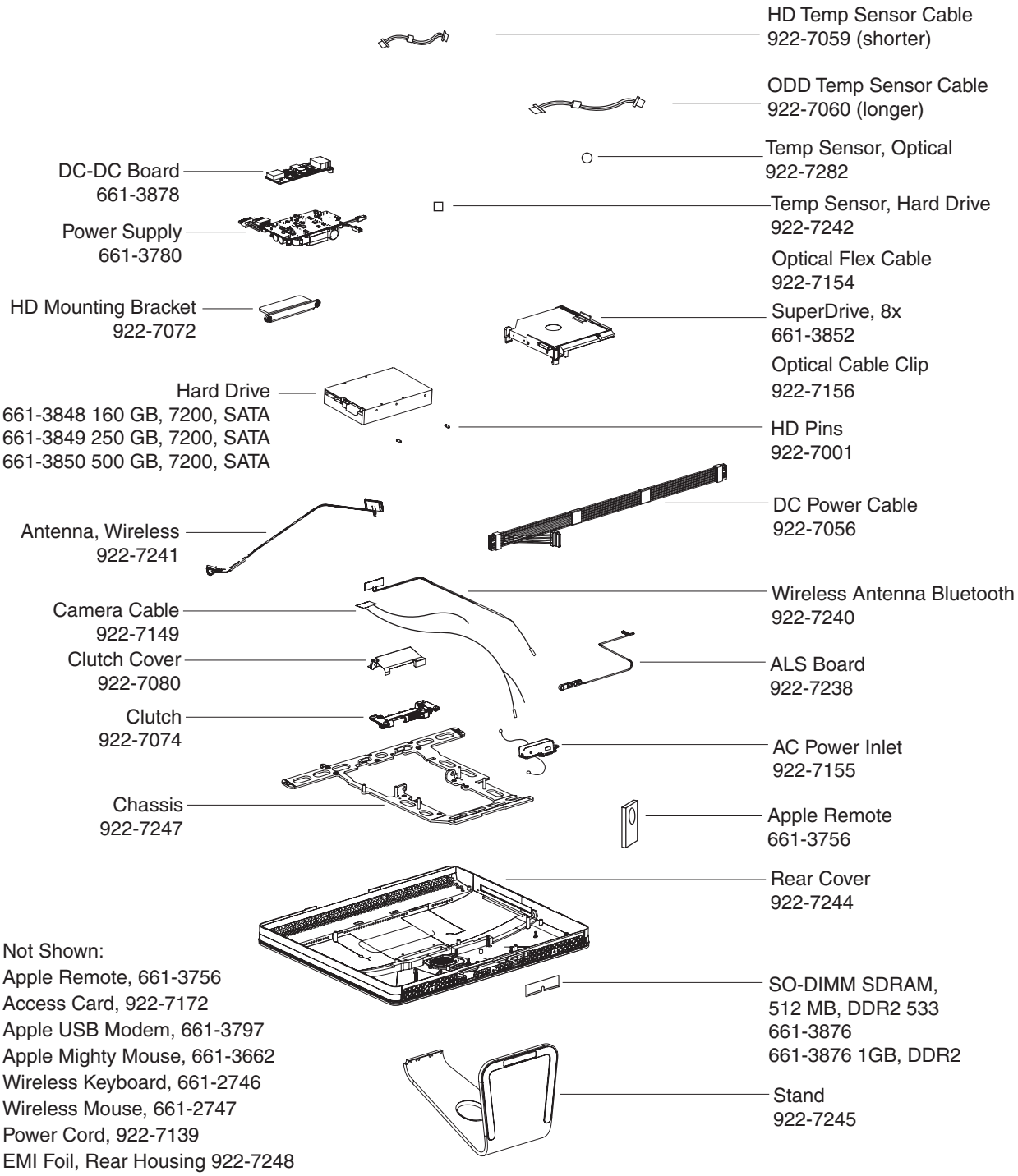
iMac (Early 2006 17-inch)—Upper Exploded View



iMac (Early 2006 17-inch)—Lower Exploded View



Not Shown:
Apple Remote, 661-3756
Access Card, 922-7172
Apple USB Modem, 661-3797
Apple Mighty Mouse, 661-3662
Wireless Keyboard, 661-2746
Wireless Mouse, 661-2747
Power Cord, 922-7139
EMI Foil, Rear Housing 922-7248

Screw Chart

922-6800 **T10** - LCD clips to front bezel - Rear shield to rear cover - Support channel to rear cover	**922-6850** **T10** - Chassis to rear cover	**922-6842** **T10** - DC board to rear cover - Logic board to chassis
922-7010 **T6** - IR board to IR bracket, TMDS cable to standoff of MLB, AirPort card to MLB	**922-7157** **T10** DC board to rear cover, black	**922-7012** **T10** Stand to interconnect

Screw Chart (continued)

922-7001 **T8, round head** Hard drive pins (2)	**922-7158** **T10** LCD bracket to 17-ich LCD	**922-7023** **T10** LCD assembly to rear cover)
922-7069 **T10** A/C to chassis	**922-7066** **T10** DC board to rear cover	**922-6842** **T10** DC board to rear cover
922-7067 **T10** Left speaker, 17-inch	**922-7068** **T10** Right speaker, 17-inch	**922-7018** **T8** Optical bezel to optical drive
922-7011 **T8** Front bezel to bottom frame	**922-7019** **T8** Hard drive clip to hard drive	**922-7020** **T10** Bracket mechanism to chassis

922-7159 **T10** Power supply to chassis		